

# AMERICAN RAILROAD JOURNAL.

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## American Railroad Journal.

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Saturday, May 3, 1851.

## European and North American R.R.

Most of our readers will undoubtedly recollect, that the Legislature of the State of Maine, at its session in the summer of 1850, made an appropriation for a preliminary survey of the line of the above road from Bangor to the eastern boundary of said State, at a point "best fitted to connect with the extension of the above road through the Province of New Brunswick." The charge of making this survey was committed to A. C. Morton, Esq., Chief Engineer of the Atlantic and St. Lawrence railroad, and we have now before us his report, accompanied by a large and carefully prepared map of the entire route.

The above project possesses a deep interest, and has attracted great attention, not only from its magnitude and the interesting character of the country traversed, but from its ultimate connection with the great route of travel between the old world and the new. It proposes to throw out a great trunk line of railroad, nearly 450 miles in

advance of all works of a similar kind, and in this respect it has no parallel in this country. Its direction is nearly the same with that pursued by the steamers running between Europe and all the North American ports: and this fact will, without doubt, cause it to be adopted as a part of the route which is now entirely performed by water. It will open too a new country, a terra incognita to a large portion of the people of the United States, and one of the richest in natural resources, and in its geological characteristics, one of the most interesting portions of the continent.

The line of the European and North American railroad commences at Bangor, and is made up of the following links, viz:

Length of line in Maine.....	96 miles.
" " New Brunswick.....	200 "
" " Nova Scotia.....	124 "
	420 miles.

The survey made by Mr. Morton was confined to the State of Maine; but his report embraces the results of the surveys of the line in both Provinces, together with a general description, and statistics of the entire route. In reference to the report, it is not too much to say, that it is a model of its kind, and presents in the clearest and most distinct manner, all the leading characteristics of the route and the country traversed, with a vast amount of statistical and geographical information which must be new to most of our readers. We shall therefore make no apology for presenting copious extracts from it in our paper.

The general characteristics of that part of the route through Maine is remarkably favorable for a railroad, owing to the uniform configuration of all that part of the State lying east of the Penobscot river. On the east of this, the range of highlands which skirt almost the entire coast of that State, assumes a more rugged and lofty character, through which the streams, draining the territory beyond, precipitate themselves over steep precipices, directly into tide water. North of this range, the country falls off, into a comparatively level plain, much less elevated than any other portion of the State. Soon after crossing the Penobscot above Bangor, the line surveyed, turns the northern flank of a spur of this range which bounds the Penobscot river and bay on the east, and reaches, by an easy slope, and by a very direct route, the table land of which we have spoken. The road will

probably cross the Penobscot about 12 miles north of Bangor, and will then take a tributary of that river, and pursue a generally eastern direction to the St. Croix river, the eastern boundary of Maine, and nearly on the dividing line between the waters running north into the Penobscot and St. Croix river, and those running south into the ocean. As almost the whole extent of country on this portion of the line is an entire wilderness, without any commanding point, controlling the location of the line, and as further survey may cause the adoption of a very different route from the one surveyed, we shall copy such parts of the report as give the general features of the line, with estimates of its cost.

The following are the estimates of cost based upon the construction of a first class road:

## ESTIMATE.

ITEMS.	Quantities.	Prices.	Am't.	Aggregate.
		Dolls.	Dolls.	Dollars.
Clearing & grubbing.....		.....	50,000	50,000
Earth Work.....	Cub. yds.			
Excavation earth, including haul.....	2,856,000	\$0 30	856,800	
Do. solid rock.....	200,000	1 00	200,000	
Do. loose stone.....	88,000	0 69	52,800	
Do. pit.....	72,195	0 35	25,269	1,134,869
Masonry.				
In bridges, abutments and piers.....	30,000	6 00	180,000	
In culverts.....	28,710	3 00	86,230	
Protection walls.....	51,952	1 50	77,928	
Bridge and culvert foundations.....			50,000	394,058
Bridge Superstructure.....	Lineal ft.			
Truss bridging.....	2,500	18 00	45,000	
Do. do.....	1,100	12 00	13,200	
Pile bridging.....	1,000	7 00	7,000	65,200
Track.....	Miles.			
Main track.....	95.5	7,500	716,250	
Side tracks & fixtures.....			30,000	746,250
Equipment.....				172,900
Buildings.				
Buildings and fixtures at Bangor.....			20,000	
Do. do. Calais.....			20,000	
Intermediate stations.....			14,000	64,000
Land for roadway and stations.....			40,000	40,000
Total cost.....				2,666,577
Av. cost per mile.....				97,920

The following is a synopsis of the grades of the whole line from the city of Bangor to Calais:

Level road.....	26.34 miles.
Grades not exceeding 10 feet per mile.....	13.95 "
" from 10 to 20 feet per mile.....	12.08 "
" " 20 to 30 ".....	14.05 "
" " 30 to 40 ".....	14.23 "
" " 40 to 45 ".....	9.20 "
" of 53 feet per mile.....	5.20 "

From the above, it appears that for 70 per cent. of the whole distance, the grades do not exceed 30 feet per mile—on 40 per cent. they are less than 10 feet per mile, and 28 per cent. of the whole road will be level. It is probable that by a more thorough examination of the country, the grade of 53 feet per mile may be reduced to 45 feet.

From 75 to 80 per cent. of the whole line will be straight, and the minimum radius of curvature will not be less than 1,400 feet.

Reconnoissances of a number of other lines having the same general direction, were made, all presenting very favorable features. The whole country in fact allows the greatest freedom in the choice of routes; and further surveys will undoubtedly effect great improvements in the line already run, and in the estimate of cost.

After the line passes into New Brunswick, two routes offer themselves, extending to the city of St. John, called the upper and lower routes, and both very favorable. If the shortest of these, in connection with the corresponding one in Maine, should be adopted, the distance by this, between Bangor and St. John, would be 168.5 miles, of which 95.5 miles would be in Maine, and 73 in New Brunswick. The greatest elevation above tide water in this distance, will not exceed 350 feet, and the maximum grade will not exceed 50 feet to the mile.—There will be no abrupt curvature, no points requiring excessive expenditure, and the cost per mile will fall below the average of New England roads.

Upon reaching New Brunswick, the general characteristics of the route through Maine continue, though the line gradually approaches the Bay of Fundy. The range of highlands, of which we have spoken, follows the coast, causing a rapid fall upon all the streams at their junction with tide water. On reaching the St. John, this peculiarity shows itself in a remarkable manner. This great river, one of the largest entering the Atlantic between the Gulf of St. Lawrence and the Mississippi, breaks through this rocky barrier by a channel of not over 400 feet wide, and with a fall, at low water, of about 20 feet. At high water, the tide rushing in through this gorge, creates a fall in an opposite direction of about ten feet. The road will cross at the falls, without the necessity of a draw, and without interruption to the navigation of the river.—The main harbor is below the falls. The river is navigable for a long distance above, though vessels can pass the falls only at high water.

After leaving the St. John, the line follows up the valley of the Kennebecasis river, (a considerable tributary of the former, entering it upon the east, and running in the general direction of the Bay of Fundy) 56 miles, to the summit between the waters that flow into the St. John, and those falling into the head of the bay. The elevation obtained here is only 150 feet above tide. From the summit, the line descends into the valley of the Annagance river, and pursues the same general northeasterly direction, till it strikes the bend of the Peticodiac, 91 miles from St. John. The following is a synopsis of the gradients of this part of the line:

Level road.....	38.75 miles.
Length of gradient—	
From a level to 5 feet per mile.....	18.52 "
" 5 feet to 10 ".....	23.72 "
" 10 " 15 ".....	1.32 "
" 15 " 20 ".....	1.92 "
of 22 feet per mile.....	6.77 "

It appears from the above statement that for about 90 per cent. of the whole distance, the gradients do not exceed 10 feet per mile, and over 43 per cent. of the whole road between St. John and the bend of the Peticodiac is level. Of the whole line, 28 per cent. is curved, but the radius of curvature generally ranges from 3000 to 8000 feet, much of which is nearly equivalent to a straight line."

The average cost of grading and bridging this division, is estimated at \$6,986 per mile, and the entire cost of the road, with its equipment, is estimated at about \$20,000 to the mile.

The bend of the Peticodiac is a very important point in the line, being the most northeasterly in the road, and the most northerly point to which the tide waters of the bay flow. At this place, too, the line surveyed approaches the Gulf of St. Lawrence, being only 15 miles from Shediac harbor, an important locality on the gulf. At the bend, the line diverges in a southeasterly direction toward Halifax, and runs to the head of Verte bay, also on the gulf, to the boundary line between New Brunswick and Nova Scotia, 35 miles, making the whole length of line through New Brunswick 199 miles. The east section in New Brunswick is equally favorable with those already described.

After entering the Province of New Brunswick, two routes present themselves, one terminating at White Haven, the most eastern port in the Province, and the other at Halifax. The present survey, however, embraces the latter only, though the other route may be ultimately selected.

It is in getting around the head of the Bay of Fundy, that the greatest difficulties in the whole line are encountered. The upper part of this bay is divided into two arms, both of which extend nearly to the Gulf of St. Lawrence. Between these arms are a high range of hills, known as the Cobequid Hills, which run nearly across the isthmus, and which are crossed by the line running to Halifax at an elevation of about 600 feet above tide. The maximum grade in ascending these hills on the north is 66 feet to the mile for 4½ miles, and on the south 57 feet to the mile for 6½ miles.—Further survey may probably reduce these gradients from 5 to 10 feet to the mile.

After descending this range, the line passes by the head of the southern arm of the bay, through the village of Truro, and pursues a pretty uniformly direct course to the city of Halifax, with easy grades, and over a generally favorable route. The whole length of line in Nova Scotia will be about 124 miles. Of this distance, 66 will be level, or with grades not exceeding 20 feet to the mile, 44 with grades not exceeding 40 feet, 10 with grades not exceeding 57 feet, and 4 miles with grades not exceeding 66 feet to the mile. The estimated cost of this portion is about \$30,000 to the mile.

The following summary shows the length of the road to be built:

Maine.....	96 miles.
New Brunswick.....	200 "
Nova Scotia.....	124 "
	420 miles.

Of the whole line, there will be over 350 miles upon which the grade will not exceed 30 feet, and over 100 miles will be level. The maximum grade

with the exception of the crossing of the Cobequid, will not exceed 50 feet, and this but for a short distance. The greatest elevation of the line in Maine is but 300, in New Brunswick but 250, and in Nova Scotia 600 feet above tide. No part of the route will be obstructed by ferries, nor will any bridges be required at all corresponding to the magnitude of the line. The whole road can be constructed at a cost not exceeding \$30,000 to the mile.

A large part of the report of Mr. Morton is devoted to an examination of the resources of the country traversed, and of the probable amount of business of the road. This portion of it, we must reserve for another number of our paper. It is well known that the Lower British Provinces are unsurpassed by any portion of this continent in mineral and agricultural resources. About two-thirds of the territory of New Brunswick is underlaid by bituminous coal fields. The same is the case, to a lesser extent, with Nova Scotia. The coal is associated with a great variety of other minerals, such as iron, lead, gypsum, etc., etc., all of which exist in inexhaustible abundance in the immediate vicinity of tide water. The soil in these provinces is of the most superior quality. In every respect, they are among the most inviting portions of the country, and with a Yankee population, would soon become one of the most flourishing. Annexed to the United States, their coal fields would supply a greater part of the fuel for all the Atlantic cities.—The great drawback to their prosperity has been their isolated condition, and the burdens to which their trade with the United States is subjected.—The proposed road will direct attention to the opportunities which they offer for the profitable investment of capital, and the intimate relation which it will bring about with the people of the United States, must end in a political union so advantageous to all parties. The Provinces will not much longer submit to have their coal excluded from our markets, when by the remission of the present duties they would find a ready outlet for millions of tons.

We conclude our present notice of the report by copying entire that part of it which relates to the Atlantic portion of this route. We shall refer to the subject on a future occasion. Mr. Morton has done the project great service by the able manner in which he has presented its merits to the public. No person can read his report, without being fully impressed, not only with the practicability of the scheme, but of its vast importance to the country traversed, and as a part of the great trans-Atlantic route to Europe.

The great and primary object of this railway is in connection with other roads to shorten the transit between Europe and America.

The astonishing increase of population and growth of the United States have created great changes in the commercial relations of the world, and more rapid and safe means of transit between Europe and America have taken the place of the former tedious modes of communication.

It is comparatively but a few years since it was deemed a doubtful enterprise to establish a line of sailing packets between New York and Liverpool although but two vessels of 450 tons burthen were at first placed on the line. What has been the result? This line not only succeeded, but other lines from all the principal Atlantic cities were soon established, and success attended them all. So great an increase of intercourse from year to year, soon made it evident that more rapid and regular means of transport must be introduced to meet the expectations of the public.

Enquiring minds directed their investigations to the use of steam power, as the agency by which this was to be accomplished. It was confidently



pronounced, by scientific men, to be impracticable to navigate the Atlantic ocean by steam. It seemed to have been forgotten in 1837, that, as far back as 1819, a steamer had made a successful voyage across the Atlantic. A steamer sailed from Savannah, May, 1819, having the same name as that of the port from which it sailed, and reached Liverpool in safety.

In September, 1833, the Royal William, of 180 horse power and 100 tons burthen, sailed from Quebec to Pictou and thence to London.

But it was not till 1838 that the practicability of ocean steam navigation was fully established, by the arrival of the "Sirius" and the "Great Western," one from Liverpool, and the other from Bristol, in New York harbor. To sketch the progress of the British Steam Marine for the last thirteen years, would furnish a history of one of the most interesting series of events on record.

In 1848 the ocean steamships of the British Government, formed a grand aggregate of 115 in all, and the number has since been largely augmented.

Regular lines are established to India by the Red Sea route, to Australia, to the West Indies, to Panama and the Pacific, to various ports of Europe, in addition to the North American line known as "Cunard's line," whose contract embraces 9 first class steamers, running alternately between Liverpool, and Boston and New York.

The progress of steam navigation in this country, for the last five years has been still more rapid. Our Government have recently established lines to Liverpool, to Bremen, to Havre and Glasgow. The contract for these lines contemplate the running of 13 steamers the present year. During many weeks of last year, no less than four arrivals of ocean steamers from Europe occurred in each week, and a daily arrival may be safely anticipated within a few years at farthest.

The average time of the eastern passages of the Collins line between New York and Liverpool for 6 months, from May to October 1850, inclusive, was 11 days, 12 hours and 51 minutes, and the average of the western passages was 11 days, 13 hours and 13 minutes. These facts show a slight saving on the average time by the Cunard line, for the same period, amounting to only one and a half hours on the eastern passages, but on the western passages there is a difference of about one day.

The shortest voyages which have yet been made were by the steamship Asia of the Cunard line, from New York, which was 10 days, 9 hours and 30 minutes, and the recent trip of the Pacific of the Collins line, from Liverpool to New York in 9 days, 20 hours and 15 minutes.

There can be no doubt but that great improvements will be made in the model and machinery of steamships, by which their speed will be materially increased. But there are other means which may be resorted to which will aid in an important degree in accomplishing this desirable object. It is proposed to make Galway or some port on the western coast of Ireland, and Halifax in Nova Scotia, the points of departure for steamships, and this reduces the length of voyage about one third from that between Liverpool and New York, consequently the tonnage of fuel may be reduced in like proportion. Vessels running in connection with railways at either extremity of the voyage, should be confined to the transportation of passengers and the mails, or at most, should be permitted to transport only light and valuable merchandise. Vessels therefore of increased size and strength, with more powerful engines, less weight of fuel, with only so much freight as may be required for steadiness, would doubtless attain much greater speed in running between these points, than could be made by the same vessel with fuel for a voyage one-third longer and loaded with freight. This saving in time and the further saving by the use of railways from Galway to London and from Halifax to New York, upon which the speed will be more than double that of the steamers, would probably make a saving of some two or three days from the time required by the present mode of conveyance between London and New York.

By this line, passengers will have railway conveyance from New York and all the cities of the Union, and from Quebec, Montreal and every part of Canada to Halifax, where they would take the

steamers for Galway direct, crossing Ireland by railway to Dublin, the channel by steamboat to Holyhead, thence to London and every part of England by railway.

This line would not only materially reduce the length of the time required for the whole journey, but lessen by one third the length, the annoyances and dangers of the voyage across the Atlantic.

It is maintained by some, that passengers generally, would embark at Liverpool and land at New York, thus performing the whole journey by water, in preference to traveling by railway to Galway, taking the steamer to Halifax, and thence by railway to New York, or having arrived at Halifax would prefer to continue on in the steamer to Boston and New York.

It is hardly necessary to argue this point, for it does not appear probable that any person who has ever experienced the annoyance of a sea voyage, would choose to embark on board of a vessel, thereby increasing the danger and length of his journey, in preference to a comfortable seat in the railway car.

With cars especially arranged with sleeping accommodations for passengers requiring the greatest dispatch, and with the improvements of track which are attainable by the adoption of the continuous rail and other changes, the traveller will be relieved from any apprehensions of increased fatigue over that by the sea voyage from Halifax to New York.

Whatever may be the result, as far as relates to passengers residing at New York city and south of it—in reference to all those residing north and east, there cannot be a question as to the course they will ordinarily take.

A merchant of Montreal for instance will by the proposed railway, be able to reach Halifax with nearly the same ease as he can travel to New York. He will therefore shape his course so as to economize time and expense, in making his passage to and from Europe.

In order to do justice to the argument in favor of this plan for shortening the transit between Europe and America, we must suppose the various projected lines having this object in view, to have been constructed and the question of time and cost both reduced to their lowest point, instead of being considered with reference to the present condition of railway facilities.

Looking at the question in this aspect it will be seen passengers will seek to avoid all unnecessary travel, and will direct their attention to the shortest practicable line across the ocean.

In making the passage to and from Europe, the point of embarkation nearest the opposite shore will always be preferred to any other, more especially when it favors increased security from sea risks, and is likely to shorten the voyage.

With these principles admitted, a large portion of the present travel to Europe will necessarily seek the easternmost point of embarkation in Nova Scotia, which may be selected for the terminus of this line. It is known that Canada, New England and the Lower Provinces furnish a large proportion of the present travel.

Again, the route to and from Europe, which is the most certain and the shortest in the point of time, must eventually become the cheapest and therefore the most frequented.

No one can question this who regards the commonest principles of commercial economy. A passage to Europe will in a very few years become a matter of as common occurrence as a journey now from New York to Niagara Falls.

Ocean steamers at the present time charge at the rate of about six cents per mile from the fact that the number of passengers is too limited to admit of a reduction of price, or because the proprietors of the existing lines demand exorbitant profits on their investments. If the number of passengers should be increased four fold the price of passage might be reduced one half at least. This result will be very shortly reached.

The rapid increase of wealth and refinement in the United States will in a very few years lead the pleasure travel that now seeks our fashionable summer resorts, to spend their leisure in the same manner among the highlands of Scotland, or on the Rhine.

The same or similar results, will be witnessed

in relation to the travel from Europe to America, which always has been and still continues to be greater than the travel from America to Europe. This great increase of travel will operate to reduce the price of passage in the same manner and to the same extent as it has operated upon the lines of railway in this country.

The consequence of this state of things will be as marked upon the character and the business of the two continents as the increase of railway facilities has been upon the character of the people of the different States of the Union.

It is well known that the most dangerous part of the voyage between New York and Liverpool is in approaching either port. Steamships after leaving New York or Boston harbor for Europe, sail along the American coast for some 800 or 1,000 miles, often enveloped in the thick fogs which so frequently prevail, and these difficulties and dangers to a certain extent are encountered in approaching or leaving Liverpool. It is on this part of the voyage that most of our disastrous shipwrecks occur.

But travelling this portion of the distance by railway, these dangers and annoyances are avoided, and the embarkation is made at points which permit vessels almost immediately to leave the coast and thus escape its perils.

Experience shows that where the railway and steamboat come in competition, the former uniformly commands the mass of passengers. We have numerous instances in our own and neighboring States which have demonstrated this in the most satisfactory manner. We have steamboats between Portland and Boston, yet the two lines of railways carry nine-tenths of the passengers that reach Boston from the east, although the fare is usually double that of the steamboat.

When the New York and New Haven railroad was proposed, it was an almost universal opinion that it could not succeed, from the fact that it was located along the shore of Long Island Sound and would have to sustain a direct competition with steamboats of the most superior character for speed elegance and comfort. Up to that time they had supplied the connection between the cities above mentioned.

The splendid steamer Connecticut had accomplished the passage in the short time of three hours and forty-five minutes, equal to 21 miles to the hour. It was thought that the dangers of the passage were not greater than by railway, as the Sound was land-locked between these cities, affording a navigation more safe and free from detentions than most rivers. Besides this, the road having a considerable extent of 40 feet grades, with many draw bridges, and but a single track, it was supposed that it would be subject to delays and dangers, not often encountered on other roads, and consequently the mass of passengers would prefer taking a steamer. It was also urged that the steamers, even with their magnificent accommodations and sumptuous tables, could be sustained by rates which would be ruinous to a railway.

In opposition to these opinions, the railway was built, and when completed and opened for travel, there were two first class steam boats running to New Haven, one to Bridgeport and one to Norwich, touching at the intermediate towns. At the present time there are no first class boats on the route, and but two freight boats, and although their fare is but half that by the railroad, they carry very few passengers.

There are now running on this railway five passenger trains each way daily between New Haven and New York, and one train each way daily between the latter place and Bridgeport, besides other trains running less distances. In addition to this there have been three freight trains each way daily for a portion of the year.

This illustrates in a forcible manner, the capabilities of railways to compete with steamboats not only for passengers but for freight. In this case it is not a simple division of the business between the two modes of conveyance, but it amounts to almost a complete monopoly of the business by the railway. There were transported on this road during the year 1850, 652,123 passengers, and its net receipts are equal to 7 per cent on an average cost of \$56,000 per mile. The Superintendent of this road says, "I am well satisfied that the ques-



tion is fully settled on this route, that steamboats cannot be sustained in competition with the railroad."

The Hudson river railway is located on the immediate banks of that river, from New York to Albany, a distance of 144 miles, and is subjected to competition from steamboats which are universally admitted to be the fastest and most magnificent steamers in the world. The navigation is unsurpassed for safety, and the beauty of the scenery along its banks renders the sail up this river the most attractive of any perhaps on this continent.

Two months after the road was first opened from New York to Peekskill, a distance of 43 miles, an account was kept of the number of passengers that left and arrived by the steamers, at Sing Sing, Dobbs Ferry and Yonkers, for 6 days in succession. This showed that the railway carried about 84 per cent of all the passengers, notwithstanding the fare was nearly double that of the steamboats. While the railway was in operation no further than Peekskill, the fare from that place to New York was 55 cents, while the boats at first charged 37 1-2 cents, and then reduced their fare to 25 cts., but having so little business even at that low fare, they were obliged to withdraw and leave the whole business to the road.

At the present time the railway is in operation to Poughkeepsie, which is one half its length, and the same results thus far attend its extension. The Albany way boats were discontinued during the last season, for the first time it is believed, since the running of steamboats on the river. The steamers, although of the best description, and the fare varying from one to two dollars, from New York to Albany, cannot command the travel.—They require from 8 to 9 hours to make the passage, while the railway can transport passengers over this route in 4 1/2 hours, and this alone is sufficient to turn the travel to the railway, at rates of fare fifty per cent above the steamboats.

The number of passengers transported on this railway, only one half of which is in operation, for nine months of the year 1850, was 509,180.

The manager of this railway says, "We consider the question settled as to the practicability of successfully competing for passengers with the best line of steamboats in the world."

Railways have been constructed on and near the coast in nearly all the Atlantic States, are in progress or contemplated along the banks of the St. Lawrence and the shores of Lake Champlain, Ontario and both sides of Lake Erie. On all of these waters first class steamers are running with great success. Railways are also being constructed parallel and near to many of the navigable waters of the Western States.

The question as to the ability of railways to command the travel in all places where they may come in competition with steamers, appears to be fully settled.

With reference to the proposed eastern line, it may be observed that all the reasons which induce the travelling public to give their preference to railway communication over that by steamboats, in the cases referred to, apply with far greater force on this line, and there can be no doubt whatever, but that it will command the mass of travel crossing the Atlantic.

#### Indiana.

*Statement of the Condition and Prospects of the Jeffersonville Railroad Company.*

Below we give such a portion of a late report issued by the above company as presents a general view of its route and business prospects.

The primary object in the construction of the Jeffersonville railroad was to open an outlet for the products of the rich and central portions of Indiana, to the Ohio river, their natural avenue to the sea, and through which a large majority of the people of that State must always receive many of their most important articles of consumption.

The great points on this river, through which Indiana receives and exports by far the larger part of the products and merchandise which make up her import and export trade, are Louisville and Cincinnati. Of these two, the one that will eventually monopolise this trade, is that which is the

most accessible from the interior, and from which produce can be most cheaply forwarded to the place of consumption. Measured by this, the only proper test, the position of Louisville and her younger sister, Jeffersonville, situate at the Falls of the Ohio, and separated only by that stream, is decidedly the superior.\* They are nearer than Cincinnati to the ultimate markets of western produce via New Orleans, and to Indianapolis, the centre of the State, and of the system of railroads radiating from that point.

It is a well known fact that the banks of the Ohio are formed or bordered by a range of high hills which frequently rise precipitously from the water. From the Miami to the Wabash, a distance of nearly 300 miles, this range is not cut through by any stream having its rise in the table lands beyond; neither is it penetrated at any one point by a gorge or depression favorable for the route of a railroad, except by the one occupied by the line of the Jeffersonville road. The general elevation of this ridge above the river is from 400 to 600 feet. The points of elevation by which it is crossed by the several lines in progress or in operation in the southern part of Indiana, will be seen by the appended table marked (A.) The summit of the ridge is gained by the Madison road by an inclined plane of 448 feet. The maximum grade of the Lawrenceburgh route, as stated in the report of that company, is 65 feet to the mile; that of the New Albany is still greater. On the Jeffersonville railroad, the steepest grade, ascending from the Ohio, is only 26 feet to the mile, and only 23 feet in the opposite direction. The table of gradients on this road will be found in the Appendix, marked (B.)

The highest point on the Jeffersonville railroad in a distance of 66 miles, is only 172 feet above the river, a fact without a parallel in any line of railroad running for an equal distance at right angles to the Ohio. Forty four miles of the line of this road is level, or have an inclination of less than ten feet to the mile. It is believed, too, that no road of equal length can be found presenting a line so direct as this, which only exceeds by one and a half miles an air line drawn between the termini. If, therefore, as before stated, Louisville be the economical point of shipment for the produce of Indiana, this road forms its cheapest and most direct route to a market.

It is not proposed here to go into an exact calculation of the extent of this superiority, but merely to give some data upon which it is founded. That the route is a remarkably favorable one, even for the West, both as regards directness, grades, and cheapness of construction, will be readily seen.—That it is the *only* route in Indiana occupying the same general direction, and having a similar object, that possesses the same favorable characteristics, has been fully proved by careful surveys.—The height at which the other lines of railway cross this range of hills proves the singular uniformity of their general elevation.

Thus far the route of the road has been spoken of only in its local aspects and bearings. It is now proposed to examine it in its connection with other lines, and with the railroad systems of different and remote parts of the country.

It is well known that lines of railroads are in progress from Charleston, Savannah, Mobile, and New Orleans, all of which are aiming to make Nashville, Tennessee, a common centre. The connection between the last named city and Savannah and Charleston is soon to be completed, and the most vigorous measures are in progress, to construct a railroad from Louisville to Nashville, for the purpose of making the former the *Ohio* terminus of the great system of southern railroads.—Louisville has voted \$1,000,000 to this object, and as the country traversed is one of the richest and most fertile description, there can be no doubt of the speedy completion of this line, opening a direct communication with the leading southern cities upon the Atlantic and Gulf of Mexico. In addition to this, that city is now engaged in throwing out other lines of railroads into the interior of Ken-

\* Below the Falls, the navigation is much better than above. The Grassy Flats sixteen miles above Louisville—well known to western boatmen—and other shoals between that and Cincinnati, are great impediments to navigation.

tucky, which promise to be of no small advantage to that State, as well as greatly beneficial to the Jeffersonville road.

Louisville is not the final terminus of any of the before mentioned lines of railroad. (This is far beyond the Mississippi.) It is only a point of union in their onward course. These, in crossing the Ohio river, find their *natural route* through the highlands of Indiana, to be that occupied by the Jeffersonville railroad. The reason that has constituted this the *only* route of convenience for a large portion of the people of Indiana, must forever constitute it the *great trunk* line for the extension of the lines already referred to, till they reach the table lands of Indiana, where they can take almost any direction that may be desired. As soon as this table land is reached, and particularly at Indianapolis, these lines are found radiating in every direction, and towards every important point in the United States.

The Jeffersonville road, therefore, is and must always be a leading channel of communication between the great northern and southern systems of railroads; upon it must be thrown the aggregate and collective business of a vast number of lines.

For the purpose of connecting herself still more intimately with other portions of the country, the city of Louisville has recently voted the sum of \$300,000 to aid this company in the more speedy completion of the road to Columbus, and its extension in a northeasterly direction, to intersect the lines of railroads running west, through the central and northern portions of Ohio, and which unite at Indianapolis. These lines are the natural prolongations of the lines of railroads running west from all the Atlantic cities north of Richmond, Va., and including that city. By this road, Louisville expects still more effectually to place herself on the main line of travel between the north and south. The proposed extension of this road is in the direction of the shortest route to Lake Erie. The Jeffersonville road, in connection with the Madison and Lafayette roads, will form an almost straight line in the direction of Lake Michigan and Chicago. The Terre Haute road will open an avenue to St. Louis. A connection with the Lawrenceburgh or Cincinnati and St. Louis road will form the shortest route between Louisville and Cincinnati. Through the Jeffersonville railroad, therefore, Louisville and other southern cities will be connected on the north with avenues leading in every desirable direction; while northern travel and commerce, seeking a southern market, will find, through the same channel, their most *convenient* route to their points of destination.

The amount of income of this road to be derived from the connections referred to and from its general relation to the country, is left for each individual to estimate according to his own judgement. It is believed that no one can examine the accompanying map without being fully convinced that it must be very large, and exceed that which will result from its local traffic; but as the extent of the former is more open to conjecture, while a local traffic, sufficient to produce an ample income, can be shown to exist, the estimates of revenue herewith submitted will be based upon local traffic alone.

Assuming that the resources of the country traversed by the Jeffersonville railroad are equal to the average of western routes, perhaps the most satisfactory and correct opinion of its probable amount of income to be derived from local traffic, may be formed from a general view of the resources, pursuits and course of trade in the West, than from any existing data, based upon past production, or from the amount of trade and transportation which is now known to exist, or in fact from the actual results of any western railroad—as these have not been a sufficient time in operation to demonstrate the full extent of their capacity.

As to the extent of production of which the west is capable, it is certainly impossible to fix any limit. This has never been tested, for the want of the proper stimulus, a *market*; or for its equivalent, suitable means of transportation. A railroad furnishes a market, in opening an outlet to one. It thus develops the resources of the adjacent country to an extent far beyond what was previously supposed to be possible, and creates for itself a business just in proportion to this development.



It may be truly said, that *agriculture* is the principal pursuit of the people of the western States—all other branches of industry being subordinate to this. They have consequently no sufficient domestic market for their surplus products. These must be exported to find a customer. The great articles of export, such as wheat, flour, hay, corn, beef, pork, etc., are of great bulk, and pay a much larger freight in proportion to their value than many other articles of merchandise, such as dry goods, teas, etc. From the superior productiveness of the country, a vast amount of transportation must be thrown upon their railroads, and from the nature of the articles carried, they must pay much more largely, according to their value, than such as make up the business of eastern roads. Another cause which will throw a much larger amount of the ordinary business of the community, (as far as travel and the movement of property are concerned,) upon western than upon eastern railroads, is that our ordinary roads—constructed over a soft and yielding soil—are almost impassable at those seasons of the year in other respects most convenient for forwarding to market. The want of good roads has been one of the principal drawbacks to the progress of the western States. The cost of transportation for a few miles only, frequently amounts to as much as the produce will sell for at the point of shipment; but by means of railroads the farmer can cheaply and expeditiously send his products to market at those periods when his labor is least profitable in his ordinary pursuits.

These general views, as to the use and necessity of railroads in the west, convey the best idea of the probable extent of their business. That is the appropriate field for railroad enterprise. They are here to have their greatest development. They are necessary as outlets to market. They never can be superseded by the ordinary road. They can be constructed at small cost compared with eastern roads. They will have a much larger amount of business in proportion to their cost; and with the greatly reduced cost of construction, they must in their operation, if the lines are judiciously selected, prove more useful to the community, and profitable as investments for capital. This is fully sustained by the best evidence—the result of roads already in operation.

#### On the Use of Caustic Lime, Instead of Limestone, in Blast Furnaces.

By E. Montefiore Levi, Engineer of the Ougree Blast Furnaces, and Dr. Emil Schmidt, Engineer of the Royal Austrian Company.

Having, in 1849, undertaken a series of very extensive researches on the composition of the gases of the large coke furnaces used at Ougree, researches which we have been prevented by other occupations from bringing as yet to a sufficiently successful termination to offer them to public appreciation, but which have furnished several very interesting results, we took a portion of gas from foot to foot from the tuyere to the mouth of the furnace, 54 feet in height, each time estimating the proportion of carbonic acid; this examination, the details of which we reserve for an ulterior communication, demonstrated clearly that very nearly the whole of the carbonic acid disengaged from the limestone is converted into oxide of carbon in its passage through the incandescent coke. We observed that the decomposition of the limestone takes place much lower in the furnace than is generally supposed, and that at the point where that decomposition takes place, the temperature is sufficiently high to allow the carbon of the coke to be absorbed by the carbonic acid evolved from the carbonate of lime. The quantity of coke thus uselessly consumed is very considerable, as the following calculation, deduced from the actual present working at Ougree, will plainly show:—

A blast furnace, smelting 53 tons of 38 per cent ore every 24 hours, will produce about 20 tons of iron—if, as at Ougree, 40 per cent of limestone are used, the total quantity is about 21 tons, containing about 9½ tons of carbonic acid; the coke consumed when limestone was used was about 150 for 100 of pig iron, or about 30 tons per diem. Now, 9½ tons of carbonic acid may be converted into oxide of carbon by the absorption of about 2 tons 12 cwt. of carbon, or 2 tons 18 cwt. of coke with 11 per cent of ash, the proportion of coke, which is

hereby uselessly absorbed, is equal to 9.74 per 100 of the total quantity which is charged into the blast furnace. Struck with this remarkable result, we acquired the conviction that, notwithstanding the fuel and labor necessary for the manufacture of lime in separate kilns, there would yet be a real and considerable advantage gained by using it instead of limestone; the fuel generally used for lime burning is of inferior quality, and its combustion is so managed that it is converted in burning into carbonic acid, a maximum proportion of the heat that it can produce is rendered available; it appeared to us, moreover, evident that, the great absorption of heat by the carbonic acid in its passage from the solid to the gaseous state no longer taking place, not only could the quantity of ore charged for a given proportion of coke be augmented, but, moreover, as the elaboration of the ore would take place at a higher point of the furnace, the descent of the charges might be hastened, and the production of the furnace augmented.

Consequently, carrying our ideas into practice, in the month of June, 1849, lime was used in lieu of limestone in the furnace No. 3 of Ougree. The result during the first few days did not answer our expectations, but we were not long in discovering the cause of this unsuccessful result. No more than the theoretical proportion of lime had been used, that is to say, 56 for 100 of the carbonate; but, necessarily, it was very far from being pure; there was, therefore, an insufficient quantity, and thence dark colored slags and difficult working.—This fault was promptly remedied by an augmentation in the proportion of lime, which was carried to 63 for 100 of limestone. From that moment, the behavior of the furnace became most regular and excellent; the proportion of ore was augmented, and the number of charges multiplied. From that period lime has constantly been used in that furnace, and invariably with the most favorable results. Eighteen months' continual use of lime in this furnace, and six months in another (furnace No. 4 of Ougree,) during which period above 15,000 tons of pig iron have been manufactured by the use of quicklime, have proved in the clearest and most positive manner, not merely the augmentation in the daily production and the diminution in the quantity of coke used, which we did foresee, but also a remarkably ameliorating influence on the whole bearing of the furnace, of which we could have had no previous idea.

Here are the proportions of coke used for the production of 100 of pig iron, during some months of 1849, according as quicklime or limestone was used:—

Limestone.	Quicklime.
March.....150	July.....142
April.....154½	August.....138
May.....156½	September.....132
June.....151½	October.....139
	November.....142
Average.....153.2	138.6
Average with limestone.....153.2	100
Ditto with lime.....138.6	90.4
Difference.....14.6	9.6

It may thus be seen that the economy is 9.6 per cent of the coke employed—figure which corresponds in the most striking manner with that of 9.74, to which we had already arrived by calculation.—Rarely have we seen provisions founded on purely theoretical considerations so fully confirmed by the practical results.

At the commencement of 1850, two new furnaces were put in blast at Ougree, the existing kilns being insufficient to supply with lime more than one furnace, and the managers of the works, considering the experience of the last six months as putting the advantage of the use of lime beyond a doubt, asked of the board of directors of the company the authority to erect new lime-kilns, so as to be enabled to supply with lime the three furnaces; but the directors were of opinion that the experiments already made, did not suffice to prove in general the advantage of the use of lime—the favorable result obtained might have been produced by an excellent state of the only blast furnace where the experiment had been tried, and that, perhaps, independently of the use of lime. For the purpose of deciding this question, quicklime was used instead

of limestone in furnace No. 4, which had during several months been working in a regular manner, using limestone as a flux; the result was immediate, and very soon a similar diminution in the consumption of coke, augmentation in the daily production, and general good working were observed, as in furnace No. 3.

The accompanying table shows the quantity of coke for 100 of iron, and the production during 28 days for six months of 1850—first, for furnace No. 1, using limestone as a flux; second, for No. 3, using lime; and third, for No. 4, using limestone during three months, and lime during three months. All the furnaces being built after precisely the same model, using the same ores, and producing white or mottled pig-iron by cold blast.

Date,	Coke for 100 Pig Iron.		
	No. 1.	No. 3.	No. 4.
1850.	Limestone.	Lime.	Limestone.
April.....	165	145	163
May.....	165	147	159
June.....	170	147½	164
			Lime.
July.....	161	146½	149½
August.....	158½	145	146
September.....	153	147½	146
Average.....	160½	146½	..
	Production During 28 Days.		
	No. 1.	No. 3.	No. 4.
	Limestone.	Lime.	Limestone.
April.....Tons	436	601	459
May.....	447	582	461
June.....	477	588	488
			Lime.
July.....	462	555	537
August.....	465	536	552
September.....	477	577	600
Average.....	461	573	..

Average, April to June—Limestone. 162 469 6 c.  
Ditto July to Sept.—Lime.....147½ 463 0

It appears, by this table, that the quantity of coke consumed is diminished 14 to 15½ per 100 of iron, and the production in a given time is increased by 22 to 24 per cent.

Although, as a flux, lime must necessarily come to a higher price than its carbonate, yet by its use is the cost of pig iron very much diminished, and the profits are multiplied, on account of the increased production. We do not consider ourselves authorized to furnish here details of the cost price; but we can affirm, with confidence, that the increase of annual profit secured by this innovation is from 25,000 fr. to 30,000 fr.

Hitherto the opinion of metallurgists has been rather unfavorable than otherwise to the use of lime: Karsten, and after him other writers, establishes the existence of this prejudice, without being able to assign a sufficiently plausible reason. M. Valerius (*traite de la fabrication de la fonte*) says, "It is said that the use of lime causes the production of scoriae rich in iron, white cast iron, &c.; and to explain this bad effect, it is remarked that the calcination of the limestone in the blast furnace produces a very considerable diminution in the temperature, which prevents the ore from arriving too soon—that is, before the oxide of iron is reduced into a region of the furnace where the heat is sufficiently great to allow of the action of the oxide of iron upon the silica." Such a reason appears to us very ill founded; the sole effect of the lowering the temperature will be to allow the ores to arrive imperfectly reduced to a zone of fusion, just as we every day have the opportunity of observing when the ores are wet. The effect of the absorption of heat caused by this moisture is the production of black slags, white pig iron, &c., precisely the contrary of what it should be if M. Valerius's reasoning were exact; but common sense alone suffices to show that a constant cause of cooling in the furnace cannot possibly be advantageous. M. Ebelmen, in his interesting researches on the reduction of iron ore in blast furnaces, observed the considerable cooling effect of the carbonic acid, and the retardation which it causes in the reduction of the ores; yet he did not remark the conversion of the carbonic acid from the limestone into oxide of carbon. The following figures are taken

from analyses made by M. Ebelmen, of a calcareous ore which had remained for some time at different depths in the blast furnace:—

	Orig- nal ore.	At 8 feet.	13 feet.	15 feet.	17 feet.
Carbonate of lime...	36.8	41	40.6	26.6	—
Quicklime.....	—	—	—	4	37.4
Peroxide of iron...	36.2	37	27.8	24.1	—
Protoxide of iron...	—	traces	12.7	17.5	30.2
Metallic iron.....	—	—	—	—	10

The height of the furnace was 27 feet; at 15 feet the carbonate of lime had scarcely undergone a commencement of decomposition. M. Ebelmen adds the following remarks—"It appears to me that the cause of the very sudden variation in the rapidity of reduction of the ores must be attributed to the disengagement of carbonic acid from limestone. It may be remarked that, in the third experiment, the ore has lost a small portion of its carbonic acid, and in the fourth the whole of the lime is in the caustic state—thus the disengagement of the carbonic acid coincides in a striking manner with a sudden variation in the temperature of the furnace, and in the rapidity with which the ores are reduced. There is nothing surprising in this, as Bischoff's experiments have proved that carbonic acid absorbs a large proportion of latent heat while passing from the solid state. The gases which pass through the furnace must, in traversing the zone where the calcination of the limestone takes place, lose a portion of their sensible heat, which becomes latent, while their reductive power is diminished, either on account of the lowering temperature, or because of the considerable admixture of carbonic acid.

In conclusion, we are, as far as we are aware, the first who have succeeded in substituting with success and economy lime for its carbonate in blast furnaces. The Ougree company, now fully convinced of the immense advantages derivable from the use of lime, is occupied with the construction of kilns heated by the blast furnace gases.—*London Mining Journal*.

#### The Ventilation of Collieries, Theoretically and Practically Considered.

BY MR. WILLIAM PRICE STRUVE, C.E.

The author commenced by showing that the general principles which ought to govern the ventilation of collieries were—1. That a current of air through the channels of collieries, at a velocity of five feet per second, was sufficient for most purposes. 2. That a current exceeding that velocity would only be attained at the expense of leakage and other evils. 3. That, in order to obtain the requisite supply of fresh air, the channels of a colliery or mine ought to be enlarged according to the exigency. In the process of laying out a mine, a sub-division occurred by which the workings were apportioned into numerous compartments, which facilitated the system of splitting the current of air, or diverting it into numerous channels, giving to each compartment a separate and, therefore, more effective ventilating force; at the same time the area of the channel was enlarged, and the aggregate length of the air-tube shortened, so that it was quite practicable to pass through the workings of a mine three hundred cubic feet of air per minute for each man employed. A comparison of the dimensions of the air passages and the velocities of the currents in numerous collieries led to an estimate of motive power required to produce the results attained in the best ventilated mines, in case of the employment of a steam engine and air pumps. This power would have varied between 23 horse power and 26 horse power. The efficiency of furnace ventilation was always increased by the depth of the shafts, especially if they were entirely devoted to the purposes of ventilation, irrespective of the working of the pit. The experiments of Mr. N. Wood, Mr. G. Elliot, Mr. H. Vivian, and other mining engineers, were then quoted, to demonstrate the insufficiency of the "steam jet" as a means of promoting ventilation, showing that it was a most wasteful application of power, when compared with the steam force employed to work Struve's mine ventilator at the Eaglesbush colliery. This apparatus consisted of two hollow pistons, resembling large gasometers, plunging into cisterns of water, and having inlet

and outlet valves. The pistons received alternate motion from a small steam engine of 5 horse power, and being filled and emptied at each revolution of the crank, produced a regularity of current and a degree of copious ventilation hitherto unknown in the mines to which they had been applied. The small cost of their establishment—only about one hundred pounds for an extensive mine—joined with the little liability of getting out of order, was much in their favor. The paper terminated with copious extracts from the able mining reports of Mr. John Phillips and Mr. Kenyon Blackwell, confirming all the positions assumed by the author. The discussion upon this paper was announced to take place at the next meeting, Tuesday, November 26, until which time the meeting was adjourned.—*Proc. Inst. Civ. Eng., Nov. 19, 1850.*

#### Weaving in Iron.

Strange as the idea may seem, it is no less strange than true, that iron, of a thickness that would make it appear impossible that it could be worked by any other agency than the forge, the anvil, and the hammer, is now, by the aid of new and powerful machinery, woven into the most beautiful patterns, and the designs varied with almost the same facility as in the weaving of a carpet, or a table cover. The specimens that we have seen, excel in beauty and finish any iron railing that we have seen, and do not cost more than half the ordinary cost of even cast iron railing. Many of the first class counting-houses and offices in New York are now fitted up with this railing, in preference to any other heretofore or at present in use. The uses of the invention, however, are not confined to railings, as the most tasteful verandahs, window gratings, garden fences, etc., are made by it. The coal miners of Pennsylvania prefer it above all other modes for their screens. Charleston and New Orleans each have parks enclosed with it, and many of the rich southerners have their flower conservatories enclosed in the same manner. In fact, wherever it has been introduced, it has come into almost unlimited favor.

Mr. John Wickersham, the ingenious inventor, also manufactures a superior article of iron wire farm fences, that cost but little, will last a man a lifetime, and are easily constructed. In thinly-wooded countries they will come into rapid demand, as they already are in many parts of Europe. Add to these one more article. Mr. Wickersham manufactures a bedstead of iron, so constructed that it can be shut up during the daytime, and will require but a few inches of room from the wall out, is bug-proof, and easily managed. We think his store (No. 240 Broadway) is worthy a visit from those who visit the city of New York.—*Daily Albany State Register*.

From the Journal of the Franklin Institute, for Feb. 1851.

Mr. Isaac Lea called the attention of the Institute to some specimens of semi-bituminous and transition coal, from Dauphin, on the Susquehanna, 8 miles above Harrisburg, and made the following remarks:

The Dauphin and Susquehanna coal company's land included that portion of the west end of the first, or southern coal field, which was semi-bituminous, and that it was the nearest coal to tide-water in Pennsylvania, being 90 miles to Havre de Grace.

The map exhibited of the several coal fields was made by R. C. Taylor, who, as geologist and mine engineer, explored this coal district, and reported most favorably on it. By it, it may be seen that the southern line of granite arrests the tide water, and thus forms shipping ports at Georgetown, Baltimore, Havre de Grace, Philadelphia, and Trenton. The parallelism to these ports, of the three coal fields—the southern, middle, and northern, or Wilkesbarre—showed the general direction of the stratification of the various formations—running nearly east and west—from the primary rocks to the carboniferous series.

The "hardest" anthracite is found at the east end of the southern or Pottsville coal field, near to the Lehigh, at Mauch Chunk, and proceeding westward the same veins or seams become "softer"—that is to say, they possess more volatile matter. The coal at Pottsville is more easily ignited, and

burns more rapidly than that at Mauch Chunk. In Pine Grove district, 12 miles west of Pottsville, the coal is "softer" still; and 10 miles further again, in the Pequa Company's land, the coal of the same veins contains still more volatile matter, and burns with a white flame, but does not coke. This is called *transition coal*, and is such as is used for making iron in South Wales, at Merthyr Tydvil. It is there called "*iron-making coal*." Four miles further west, at Yellow Spring Gap, is found the true *semi-bituminous coal*, which cokes or swells in burning, but does not "bind" or cement. This quality permits the draft of air to pass through and keep the carburetted hydrogen and carbonic oxide gases constantly ignited; hence the absence of smoke. This condition admirably adapts this coal for *steamers* and *locomotives*. All the European steamers use this kind of coal, which is obtained from South Wales, and it is carried to all parts of the world, where steamers ply, for that purpose. Four miles further west, at Rattling Run Gap, the quantity of volatile matter is still greater, and the coal burns quicker. Three miles further again, at the Big Flats, the coal will bind. Here the veins have narrowed down to three feet in thickness.

The coal at the east end of this coal field, at Lehigh, contains about 6 per cent. of volatile matter, while the transition coal of Rausch Gap contains about 11 per cent., and the semi-bituminous coal of Yellow Spring Gap has 14 per cent.; and that of Rattling Run 17 per cent.

This gradation is well marked in the specimens presented, and the change in this coal field may be compared to that of South Wales, and Donetz in the south of Russia, where the same condition of things exists—that is, hard anthracite at one end, and bituminous at the other, with the intermediate gradual changes. The analogy of the coals of Dauphin county with the celebrated Welsh coals, may be understood by the following analyses:

Dauphin Coal.	Vol. Matter.
Yellow Springs, Kugler vein.....	9.80
" Backbone vein.....	14.88
Rattling Run, Perseverance vein.....	15.80
Grey vein.....	11.40
Lea vein.....	8.96
Grey vein, black part.....	9.78
Peacock vein.....	9.00
Welsh Coal.	Vol. Matter.
Aberdeen blast Furnace.....	8.33
Tredegar coal.....	15.20
Dowlas Big vein.....	15.62
Dowlas Big vein, central part.....	11.87
Mountain vein, Merthyr.....	8.48
Cwm-dhu pit, ".....	9.22
Raslas vein, Aberdare Iron Works.....	9.11

Coals may be classified into four divisions—bituminous, semi-bituminous, transition and anthracite. Anthracite burns with a weak blue flame, and does not swell, making an intense but concentrated heat. Transition coal burns with a short white flame, and does not swell or coke. Semi-bituminous coal burns rapidly, gives out a long white flame, (carburetted hydrogen,) swells much, does not bind, and makes very little smoke. It evaporates more water than any other kind of coal. Bituminous coal burns with a white flame, swells, and while coking "binds," or cements, making much smoke.

The Dauphin coal company have finished their railroad in the most substantial manner, with H rail, of the best quality, equal to any 20 miles in the State. The western terminus is at the town of Dauphin, 8 miles above Harrisburg, where the company have a basin and large depot, constructed to ship, by the Susquehanna State canal, any reasonable quantity of coal to market. The works were finished late in the autumn, but in time to send over 4,000 tons to market, which has been used in part by Collins' line and other steamers.—The engineers of the Collins' line reported the Dauphin coal to be "pre-eminent for marine purposes over any of the coals submitted for trial, requiring less labor by 75 per cent." than the Cumberland coal, which evaporated in an hour only 423.5 lbs. of water, while the Dauphin coal evaporated in the same time 523.8 lbs.—thus producing nearly 25 per cent more steam in a given time.

The Dauphin company's works being now complete, and all their connections made, they will



commence their regular trade with the opening of the Susquehanna canal, early in March, when their coal will, it is believed, go into general use in locomotives, as well as steamers, successful experiments having been made in the former by Mr. Baldwin, and other experienced engine builders and engineers.

#### New Mexico.

The subjoined new statistics of New Mexico have just been communicated by the Superintendent of the census:—"The total number of square miles in the Territory is 199,027; population on June 1st, 1850, was 61,574; deaths during the year previous, 1,157; farms, 6,715; productive establishments, 20. The number of sheep in the territory is 453,293, valued at \$566,616 25; the number of mules, 11,887, valued at \$594,350; the number of horses is 7,050, valued at \$211,500; the number of cattle is 31,581 valued at \$378,972."

#### Internal Improvements in Virginia.

During the recent session of the Virginia Legislature the following appropriations for internal improvements were made in the several districts named:

For Tide-water.....	\$26,611 18
For Piedmont.....	1,133,875 00
For Valley.....	288,120 00
For Trans-Alleghany.....	330,040 00
Improvements lying in several districts.....	822,716 00
	\$2,591,362 18

These sums, added to those heretofore granted, make the general aggregate as follows:

Amount expended in Tide water.....	\$819,934 96
Piedmont.....	8,579,460 77
Valley.....	2,399,883 85
Trans-Alleghany.....	1,824,138 60
	\$13,623,418 18

#### Railroad and Wire Suspension Bridge.

The work upon the Louisville and Frankfort railroad is progressing so fast that it is expected by the 10th or 15th of May it will be finished to the Kentucky river at Frankfort. In the meantime, the construction of the bridge by which it is to cross is going forward so rapidly that by the time the road reaches the river, the bridge will be so far advanced that passengers can walk across upon it into our city. Seven of the eight immense wire cables have already been passed across the tower upon this side of the river. In a few days they will all be in their places. The length of the cables are 585 feet, and the height of the towers some 75 feet above the present surface of the water, which is at an ordinary stage for the season.—*Frankfort Commonwealth.*

*Translated for the Mechanics' Magazine.*

#### Farther Applications of Centrifugal Action to Manufacturing Purposes.

It is well known that a centrifugal machine has been hitherto employed with much advantage for the drying of textile fabrics and for clarifying sugar; but these are not the only purposes to which it is adapted; for every day new applications of this apparatus suggest themselves, and important problems are solved by its means.

We now learn that one of the most important operations of brewing may be wonderfully simplified by the use of a centrifugal apparatus. It has hitherto been considered exceedingly difficult to reduce the temperature of beer to the degree of coolness requisite; it has been necessary to make use of refrigerators for this purpose, and, notwithstanding all precautions, mistakes not unfrequently happen. It occurred to some English brewers that this difficult cooling process might be effected by means of a centrifugal machine. This idea has been put in practice with complete success. The beer was reduced to the desired temperature by merely passing it through the machine; and this was effected not only with great rapidity, but also with considerable economy.

Some time back, a M. Gauthier de la Touche, of Paris, endeavored to produce ice by means of a

hydrofugal apparatus. He did not succeed in reducing water to the freezing point, but he cooled it to a degree far below that required in brewing beer.

It would be superfluous to explain these results, for every one is acquainted with the effects of a very rapid ventilation, and the centrifugal machines are made to rotate at the rate of 3000 revolutions per minute, and even quicker.

We are further informed that in certain manufacturing in Alsace, a hydrofugal machine is used for making starch. When flour is stirred about in water, the different substances range themselves according to their specific gravities (unless prevented by some peculiar circumstance.) Now this is precisely the result obtained by the centrifugal machine; starch, being the heaviest substance, separates itself from the others, and is the first precipitated.

The centrifugal machine may also be advantageously applied for classifying grain, seed, or ores, according to their respective densities, or any other substances of different densities, whether liquid or solid, provided that they are not of a cohesive nature, or that whatever cohesiveness they possess may be easily removed.

In fact, the centrifugal apparatus may be applied to so many different manufactures, that it may justly be looked upon as one of the most fortunate and fruitful inventions of modern times.

#### Canadian Commerce for 1850.

From an inspection of the official returns of the trade of the Province during the year 1850, we have been enabled to compile the following summary of the year's commercial transactions.

The value of the imports was:

From Great Britain.....	£2,407,980 4 0
" British N. A. colonies.....	96,404 19 6
" West Indies.....	1,112 19 3
" United States.....	1,648,715 2 5
" Other foreign countries.....	91,303 18 4

Total imports for 1850.....£2,445,517 3 6

The duties paid on goods imported were as follows:

	value.	duty.
Specific duties.....	£654,945 19 9	£233,536 19 1
30 per cent.....	42,854 9 5	12,847 6 9
20 " ".....	23,319 13 10	4,663 19 5
12½ " ".....	2,838,417 1 7	354,802 2 5
2½ " ".....	391,846 11 9	9,795 7 0
Free goods.....	294,133 7 2	

Total.....£2,445,517 3 6 £615,645 14 8

The value of the exports from Canada during the same period was as follows:

To Great Britain.....	£1,521,279 15 3
To the United States.....	1,237,783 17 11
To North American colonies.....	202,194 1 3
To West Indies.....	2,094 0 0
To other countries.....	27,070 6 4

£2,990,428 0 9

The exports are thus classified:

Produce of the mine.....	£9,145 12 0
Produce of the seas.....	36,512 15 7
Produce of the forest.....	1,360,734 6 4
Arrivals and their products.....	157,580 6 0
Vegetable food.....	1,046,034 6 4
Other agricultural produce.....	13,439 14 10
Manufactures.....	6,676 19 1
Shipping, sold abroad.....	320,430 0 0
Other articles.....	39,874 0 7

£2,990,428 0 9

#### Lake Superior Copper Mines.

By the last mail from Lake Superior, the Tribune has received copious accounts of the operations in the copper region for the past year, from which we make the following extracts:

"I have visited the North American and Cliff mines. The former looks well, and will, I think, ship about two hundred tons the coming season.—The Cliff looks better than ever. In the bottom drift, south, there is a mass of copper about fifty

feet in length, extending as far as drifted in south, about one foot thick and apparently pure. There is also another mass a little north, between No. 5 and No. 6 drift, weighing 50 tons, which is now being cut up. There is also another mass in the north end of the bottom drift extending to the end of the drift north, and 30 feet in height. The sheet is pure, and about 18 inches thick. The other parts of the mine look well, and there is a large amount of stamp work now on the surface."

"Late accounts received from the 'Adventure,' say the show has much improved."

"I left the North Western a few days since.—In No. 3 shaft the vein is four feet wide of rich barrel and stamp work. They are now drifting on the vein south to connect with the adit from No. 2 shaft north, both of which will prove the vein to a great extent. The prospect is very encouraging."

"The Agate Harbor mine has also a very favorable appearance for a new mine."

"There are two new mines working, Iron City mine and Cape mine. Iron City is three miles east, and Cape mine five miles from Agate Harbor mine. Iron City is a Pittsburgh company, Cape mine a Philadelphia company. The mine of each company looks very well for the amount of labor done. These are the only mines working east of the North West mine, but there will be no less than eight other companies commence mining next summer, east of North West mine. The North West mine never looked better than at present. The vein looks better as they get deeper. They have taken out some masses of pure copper lately, weighing from four to five tons each. The mine captain of the North West told me not long since that he thought he should have about 130 tons of copper ready to ship by the opening of navigation."

"Since I wrote you in the fall, I have been to the Ontonagon. I left Eagle River on New Year's day for Ontonagon. I made the trip in four days. On arriving in the Ontonagon county, I was much surprised to see so much preparation making to commence mining this spring. Some had got houses built, others were building, and others had got half a dozen men or so making a commencement at mining. I saw all of the mines that were being worked, except the old Ontonagon company's mine. I counted 14 mines in all, and some of that number were very rich. There is one mine near the Porcupine mountain, called the Norwick mine, the stock of which is held in New York.—The company have got a vein, from a foot to 18 inches thick, nearly pure copper. They have two miners, and three or four laborers at work, and have got out sixty tons of copper. The Minnesota Ridge, Peninsula, Forest, Adventure, Piscataqua, Ohio, Merchant, Great Western, Algonquin, Bohemian and Douglass Houghton, are all mines that have got copper to work on, and there is not one of the above mines but is well deserving of considerable money being spent to prove their real value."

#### Canada.

We learn from the Montreal Herald that a meeting was held in that city recently, to consider the expediency and practicability of constructing the Vermont Junction railway, and to determine upon the proposition submitted by the chairman and secretary of the Provisional committee of that company, to raise stock subscriptions in that city:

The secretary of the company stated in the meeting, that in the country parts, he had been well sustained in his exertions to carry forward this enterprise. The question submitted to the meeting was simply to ascertain whether, in the opinion of those gentlemen present, the objects secured in the construction of the Montreal and Vermont Junction railway, to connect with the Burlington and Rutland railroad, the Passumpsic and Connecticut river railroad, the contemplated Stanstead and Missisquoi Valley railroad, with various tributary and connecting lines of railway from Boston, Portsmouth, and the Connecticut and Hudson valleys, were of sufficient importance to the city of Montreal to obtain stock subscriptions to the amount of £25,000, which, with the country subscriptions, and the assistance expected from other sources, will insure the construction of the

line, from St. John to the Province line at Vermont, within one year.

# AMERICAN RAILROAD JOURNAL.

Saturday, May 3, 1851.

## Notice to Contractors.

ENGINEER'S OFFICE,  
Petersburgh, April 24th, 1851.  
**PROPOSALS** will be received until the 20th of May next for laying 40 miles of the Track of the South Side railroad.

The Railroad Company will furnish all materials.

Plans and Specifications will be exhibited for several days previous to the letting.

Personal security to the amount of about 20 per cent. of the contract or contracts will be required, and each proposal must be accompanied with a letter from a responsible person, stating that he will become the security.

3t18

C. O. SANFORD,  
Chief Engineer.

## To Railroad Companies.

### SALISBURY REFINED IRON.

THE Undersigned, having enlarged and perfected his Works, is now prepared to furnish Locomotive Tire of a better quality than have heretofore been used. Railroad Companies who may wish it, will be furnished with a set for trial, not to be paid for until they are satisfied of their superior quality over any other. Also made at short notice, and in the best manner, Locomotive Cranks, Engine and Car Axles, and other Locomotive Forgings.

All work ordered from me will be made of Salisbury Iron, and done in the best manner.

Address HORATIO AMES,  
Falls Village, Conn.

May 1, 1851.

### European and North American Railway.

This project is producing some singular and marked results in the colonial policy of the British government. It is well known that the Lower British Provinces and Lower Canada, have for years been endeavoring to obtain the aid of the home government in the construction of the Halifax and Quebec railroad, but without the slightest success. The proposed road being 636 miles long, and the estimated cost about \$20,000,000, neither private means nor the provincial securities were considered sufficient to the accomplishment of this work, and all idea of its prosecution seemed to have been abandoned. We may here remark that the whole scheme was entirely a chimerical one, without any reason in its favor, but that it would serve as a bond of union between the Provinces, and as a military highway, in case of war with the United States. A large portion of the route to be traversed by this line is of the most desolate and uninviting character, and covered for nearly one-half of the year with snows, to a depth of from one to six feet. The whole route is very sparsely settled, and nearly 200 miles of it covered with a dense forest. In case of a war, the whole military power of the British Empire could not defend all parts of this line against the efforts of one thousand resolute men. In a commercial point of view, it would be utterly worthless, and would not pay running expenses, if it were built and fully equipped. The home government very properly declined loaning its aid to such a work, and the scheme was practically abandoned.

When the project of the European and North American railroad was presented to the people of New Brunswick and Nova Scotia, it was immediately seized upon, as accomplishing all they proposed by the Halifax and Quebec railroad, and vastly more; and as a project within their own means. The proposed road would bring them into

direct connection with their natural markets, and place them on the great route of travel between Europe and the United States. Its cost would be moderate, and its construction appeared to be justified, from pecuniary considerations alone, and the means could be readily provided by the Provincial guarantees. The best feeling prevailed in both Provinces, and in New Brunswick the obvious and proper course was pursued, that of raising all that could be obtained by private subscriptions, and supplying the deficiency by the credit of the province, upon which money could be obtained at a very low rate of interest. In Nova Scotia, unfortunately, a different policy was adopted. Instead of relying upon themselves, the people of that province sent an agent to England to solicit, not the means for the work, but the imperial guarantee of the Provincial debentures. This, which had always been refused, was now offered, but it was offered in aid of the old exploded project of the Halifax and Quebec railroad, and upon the condition that the three colonies of New Brunswick, Nova Scotia and Canada should pledge to the imperial government the whole of their revenues, except the sums now payable by law; secondly, that they shall also consent to the imposition of such taxes as will ensure the annual payment of the interest on the capital advanced, and the establishment of a sinking fund for the gradual liquidation of the debt; the said taxes to be permanent until the whole is paid, "and the imperial government to decide what taxes are necessary;" and thirdly, that the said taxes are to be under the control of commissioners appointed by the imperial government. To these conditions it is understood that the agent of Nova Scotia has assented, and has apparently committed that Province to the same policy. But New Brunswick has taken an entirely different view of the matter, and her Legislature has protested against the acceptance of the proposition of the home government, which, if accepted, would defeat the European and North American railroad, and turn her whole resources to support a scheme that would impose upon her a debt of over \$6,000,000 for a work which would neither accommodate the great mass of her population, nor become the source of any revenue, nor productive of any useful results. Neither Nova Scotia nor Canada are going to throw away their money, nor pledge their credits in support of the Halifax and Quebec railroad, and the only effect that the mission of Mr. Howe will have, will be to embarrass the operations of the European and North American railroad company, and postpone the commencement of the work. The manifest interests of the Provinces, and the exercise of plain common sense, will in the end direct their cause. It is to be regretted that any of them should be so unconscious of their own strength, and so wanting in a just appreciation of their own position, as to feel compelled to run home to the mother country for aid every time that a proposition comes up requiring the raising of a little money. To all such aid, the home government affixes an onerous condition, both inconsistent with their pecuniary interests, and their freedom as a State. The absolute dependence upon the home government, which has existed among all the British colonies, and the spectacle of wretchedness which many of them present, now that the support once extended is withdrawn, is one of the most humiliating sights in the world; and the sooner that such Provinces acquire a proper self-reliance, and the habit of taking care of themselves, the better.

With regard to the final result of the mission of Mr. Howe, we have nothing to fear, though it may cause some immediate confusion among the friends of this great work, which the State of Maine, and the Lower British Provinces, have so much at heart.

The sudden change in the policy of Great Britain, of which we have spoken, is certainly very significant. The construction of the European and North American railroad would connect, by an indissoluble tie, all the great material interests of the people of New Brunswick and Nova Scotia, and those of the United States, and this in the end would result in a similarity of ideas, of tastes and pursuits, and of institutions. People so situated, and of the same great national family, would not long exist as separate nations. Mutual interests would draw them together, and the above road is the only thing wanting to give the Provinces sufficient strength to consult her own inclinations, when the proper time for action arrives. English statesmen are wise enough to see this, and hence the sudden relenting of that government. But this policy is too transparent to have any effect. Neither England nor the United States can materially hasten or postpone the question of annexation. It will come of itself, just as soon as the two parties are prepared; and through the railroad, this work of preparation is now going on with wonderful rapidity.

### Stock and Money Market.

As the season opens, money continues to increase in abundance, and everything now indicates a plentiful supply for some time to come. This fact is very favorable for our new lines of railroad, and will ensure the completion of many important roads, before any commercial crisis or revulsion can take place. It is but reasonable to expect that the immense call for new works will in time cause a scarcity of money; but if, in the meantime, we can open a continuous line from the Atlantic to the Mississippi, and also from the great lakes to the gulf, we shall have done a vast deal to avert the effects of any unfavorable change of times.—Such lines would vastly strengthen our whole railroad fabric, and would tend more than anything else to give confidence in this species of property. In 1836, the whole systems of internal improvement fell through, before any practical result had been obtained. Our leading schemes are now bound to be completed, whatever may be the fact as to their success.

As we advance, the magnitude of our projects increases instead of diminishing. Active operations are to be immediately commenced upon the Illinois Central railroad by a company possessed of means, which promises the most vigorous prosecution of this work, embracing the greatest extent of line under one charter of any in the United States. The whole length of the line of this road with its branches cannot be less than 550 miles. Almost every portion of it is equally favorable, and as work can be commenced at various points with equal economy, the road can be completed in the time that it would take to construct one of half its length. In the east, the European and North American railroad will summon to its construction powerful parties, with means to open that line at the earliest day. No project in this country is likely to attract more attention, from its intimate connection with business, with our great lines of vel, and our political relations.

The Erie railroad is completed, though not



yet opened for business. The prospects of the road are most flattering, and its present earnings fully up to the estimates of its warmest friends. The earnings for April were as follows:—

Passengers and mail.....\$87,980 81  
Freight.....101,168 70

Total.....189,149 51  
April, 1850.....141,984 89

Excess.....\$47,164 62

The traffic of the four months of this year, compared with the same months of last year, has been as annexed:—

1851.....\$622,563  
1850.....487,730

Increase (30 per cent).....\$134,833

As a general rule, all our railroads show a very marked increase in receipts over the past year. Every mile of new line built adds directly to the value of those in operation.

The Mansfield and Sandusky railroad bonds sold at auction this week, brought about 90 cents.

The English quotations for rails by the last steamer are from £5 2s. 6d. to £5 7s. 6d. Welsh bars from £4 15s. to £4 17s.

#### SALES OF STOCK IN NEW YORK.

	April 30. Sales.	April 23. Sales.
U. S '67 Loan.....	117½	117
Erie R.R.....	88½	89½
Harlem R.R.....	73½	73½
Stonington.....	43½	44
L.I. R.R.....	23½	23½
Norwich & Wor.....	65	65
Del. & Hudson.....	129½	128
Reading.....	57½	59
Morris Canal.....	16½	18½
Erie income.....	96	96
" " Bonds.....	102½	102
Canton.....	70	72
Farmers Loan.....	65	65

#### SALES OF STOCKS IN BOSTON.

	April 29.	April 22.
Old Colony Railroad.....	66½	67
Boston and Maine R.R.....	104½	104
Eastern Railroad.....	102½	101½
Fitchburg Railroad.....	111½	111½
Michigan Central Railroad.....	98	94½
Northern Railroad.....	69	70½
Vermont Central Railroad.....	35	35½
Vermont and Mass. R.R.....	32	33
Western Railroad.....	102½	102
Ogdensburg Railroad.....	40½	40
Rutland Railroad.....	57	58½
Boston and Worcester Railroad.....	103½	104
Rutland Railroad Bonds.....	97	97
Ogdensburg Railroad Bonds.....	97½	97½
Vermont Central R.R. Bonds.....	91½	92
Boston and Providence R.R.....	85½	85
Philadelphia, Wilm'gton & Balt.....	29½	29½
Concord R.R.....	56	56
Manchester and Lawrence.....	90	90

#### The Hoosic Tunnel.

A bill is now before the Legislature of Massachusetts, and has already passed the Senate, authorising the issue of State debentures in aid of the above work, secured by a lien upon the Vermont and Massachusetts, and the Troy and Greenfield railroads; the former of which is hardly able to keep its own neck above water, and the latter a road yet in embryo. We never had any faith in the practicability of this work by the expenditure of any reasonable sum, neither do we believe it will be attempted. Still we should like to see the experiment tried, and if it should turn out to be a successful one, a new and better route would be opened from Boston to the Hudson.

We know nothing about the engineering difficulties of this work, and we have hardly read the

opinion of an engineer in reference to it, but we are probably about as wise as those who claim to speak with the most confidence. Our eyes are just as good at looking through a millstone, as those of the most skilful engineer, and when the character of the excavation is a matter of conjecture, our guess is as good as that of any other person. The truth is, the whole matter of cost is the merest guess work in the world, and no sensible engineer will hazard his reputation upon an estimate with such few data. What is to be encountered in a tunnel of 4 miles, and from 1,000 to 1,500 feet below the top of the mountain, no mortal can tell; and the idea of stating a result in the absence of proper evidence, is too absurd to be tolerated. We predict that the engineer who takes charge of the work, and the person who contracts to carry it through, will be the first to quit it.

Neither can we see a necessity for this tunnel sufficient to justify its construction. The line which it is to accommodate is a rival of the Western road, and we never heard that that road had more business than it could accommodate, and accommodate very well. With a double track, we presume it might dispatch twice its present business, without inconvenience to itself or the public. If this is so, it precludes all necessity of another road with a similar object. More especially can we see no reason to induce the State to embark in an enterprise which is not called for by the wants of trade and travel, and which may come into direct competition with one in which she is involved. However, the experiment would be an interesting one, and for this only should we like to see it undertaken.

#### European and North American Railroad.

The Legislature of New Brunswick has just passed a bill giving the above road all the ungranted land within five miles of its line on either side.

The directors of the Western railroad corporation have addressed a memorial to the Legislature of Massachusetts against the proposed loan of the credit of the State, to the amount of two millions of dollars, to the Troy and Greenfield railroad, for the construction of the Hoosic tunnel.

#### New York.

**Hudson River Railroad.**—The Evening Journal says that about twelve miles of iron rail has already been laid on the Hudson river road, between Greenbush and Hudson, and when it shall have been filled up to the depth of two feet with gravel, this portion of the railroad will be completed. It is being very strongly constructed, and when completed will be a more substantial road than any now leading from this city. It is the intention of the engineer to have it in running order to Hudson in June next. Preparations are being made for the early construction of a depot and an engine house, which will be located a short distance south of the East Albany depot.

**Railroad Speed.**—The 95 miles between Utica and Albany was run one evening last week, with a heavy express train, in 2 hours and 34 minutes, by the Utica and Schenectady railroad companies. This includes two stops on the Utica road and a change of engine and baggage at Schenectady. The same rate of speed from Albany to Buffalo would make the trip in nine hours.

#### Indiana.

**Bellefontaine and Indiana Railroad.**—The county of Allen has voted to subscribe \$80,000 to this work.

#### Wilmington and Manchester Railroad.

The president and engineers of this company have recently visited this city, for the purpose of negotiating the purchase of the iron and machinery for this great work, and we learn that there is every probability that it will be completed within the next two years.

In addition to its local uses, the public are deeply interested in this road, as the connecting link between the roads of the extreme south and those of the north. At the present time, the traveller in reaching Wilmington, N. C., is obliged to take the dangerous route by sea if he wishes to go to Charleston or Savannah, or to pass over any other roads of South Carolina, Georgia or Alabama. On the completion of the Wilmington and Manchester railroad, a continuous line will be in operation from the eastern part of Maine to Montgomery, Alabama, if not to Mobile and New Orleans.

#### New York.

**Plattsburgh and Montreal Railroad.**—The Directors are going forward energetically with this road. From the Plattsburgh Republican we learn that the directors have employed Mr. T. J. Carter, an engineer of well known competence and experience, to locate and superintend the construction of their road. We understand, also, that Mr. C. will commence operations on the locating survey on the 22d inst.; on the completion of which and the requisite estimates, &c., the contracts for grading are to be let, and the work pushed on with energy, to an early completion.

By the terms of agreement, Mr. Carter we learn has also the superintendence of the construction of the Canadian end of the road, from Moosers to Caughnawaga—thus bringing the whole line of the road, from Plattsburgh to Caughnawaga, under the eye and management of one superintending engineer.

#### Wisconsin.

**Dodgeville and Potosi Railroad.**—The Potosi Republican says that a large meeting was held at Platteville on the 13th of March, in reference to the Potosi and Dodgeville railroad company. D. A. Mackensie, Esq., was unanimously elected President of said company, and a resolution passed that the subscription books of said company be opened on Tuesday, the 22d of April, at 10 o'clock A. M., at the following places, viz: Potosi, Platteville, Mineral Point, Dodgeville, Highland, Clifton and Lancaster. There is a fair prospect of the stock being taken.

#### A Railroad From St. Petersburg to Warsaw.

The Emperor of Russia, having nearly completed the railroad from St. Petersburg to Moscow, (420 miles,) is now about to begin a railroad from St. Petersburg to Warsaw, between 700 and 800 miles.

The Chief Engineer of this new railroad will be Major T. S. Brown, who is now engaged on the other road, and who was late engineer on the Erie railroad.

#### Michigan.

A railroad Convention is to be held next month, at some point on the route between Detroit and Port Huron, to make a united effort to procure subscription for the immediate grade and superstructure of the contemplated railroad from this city to Port Huron. Offers are made for furnishing the necessary iron, as soon as the road is ready for laying it.

**New York.**

**Northern Railroad.**—The Albany Evening Journal states that this road will be put under contract in a few days. It is the intention of the Directors to push forward this important work with all possible dispatch, and to have the road in running order from this city to Cohoes early next fall. Ground will be broken at an early day, probably next week. The original intention of the projectors of this enterprise was to have this road connect with the Albany and Schenectady railroad a short distance from here, and to use their track in this city; but the Directors of the Northern road have determined to make it an entirely separate and distinct road. The line now being surveyed by Mr. BULLIONS, is due north, commencing east of the Patroon's Mansion, running along the line of the canal until it reaches the gate on the Troy road, where it is proposed to tunnel the road, and from thence run the road to West-Troy and Cohoes. If this is carried out, the track will be laid through Water street.

**Illinois.**

**Mississippi and Atlantic Railroad.**—This road is designed to connect Terre Haute with Illinoistown, opposite St. Louis, and is the same which the Legislature, at its late session, refused to grant the right of way and construction to. The stockholders, however, appear determined to push it through despite the Legislature. A meeting, to this end, was held at Vandalia on the 3d inst., over which Col. William B. Archer, of Clark county, presided. The proceedings of meetings held in various counties interested in the road, were laid before the Vandalia meeting, pledging these counties to support the Directors in any measures they may see fit to adopt in the premises. William S. Wait, Esq., President of the Board, addressed the meeting, after which the following resolutions were unanimously adopted:

1st. Resolved, That the stockholders approve of the action of the Board of Directors in procuring a complete survey of the route of the Mississippi and Atlantic railroad.

2d. Resolved, That they are highly gratified in the efforts already made, and the success that has attended the procuring the right of way thus far.

3d. Resolved, That the stockholders recommend such further measures as may be conceived necessary and expedient by the President and Board of Directors to accomplish the object of the incorporation, and that we will give our hearty support in carrying out the same.

4th. Resolved, That the Directors be requested to put the whole or a part of the road under contract so soon as a sufficient amount of stock is subscribed to justify it.

We learn that the right of way for about two-thirds of this distance has already been secured.

**Railroads—Population.**

The New Haven Palladium, in an article on the census of the State, gives the following results, showing the effect of railroads upon the increase of population. It says:

The very gratifying gain in Connecticut, greater than for the previous forty years, is due in a great measure, if not entirely, to the railroads which now traverse almost every part of the State. If we examine the returns from the inland towns, we will find that those lying on the line of railroads have increased largely, while others with equal natural advantages, have either lost or made very small gains. Take for instance the Housatonic road. The towns through which it passes have gained over 6,000, while the corresponding range of towns on the east, have gained less than 200. The towns on the Norwich and Worcester road have gained over 5,000, and the adjoining tier of towns about 250. So, also, those counties where there are the most railroads, have increased much

faster than other counties equally well situated. New Haven has gained thirty-six per cent., while New London has only increased fourteen. Hartford twenty-six per cent., and Tolland eleven. Fairfield twenty, and Middlesex eleven. The population to the square mile in the State, is seventy-nine and seven-eighths; in New Haven county two hundred and twenty-two; Hartford ninety-six and a half; Windham fifty and two-thirds; Litchfield fifty-one and one-fourth; Middlesex eighty-one; Tolland fifty-nine and a half. It will be seen that New Haven county has by far the largest number of inhabitants to the mile, having twenty-five and two thirds more than Hartford, which is the next largest.

**Northern Indiana and Southern Michigan Railroad.**

The Board of Directors of the Northern Indiana railroad company held a meeting at this place last Monday.

The grading to this place will be completed by June, at which time the iron will be here to be laid down.

The route from here west was not settled by the Board, but will be permanently located by the Chief Engineer, Mr. Jervis, probably within two weeks. The south route is one mile and five-eighths shorter than the north route; but the advantages of the two routes are so near an equilibrium that it is supposed the relative cost of the right of way will settle the question. If the north route should finally be adopted, it would run through both Terre Coupee and Rolling Prairies, skirting around and close to the high ground, at New Carlisle. On Terre Coupee the route as surveyed angles across the farms but little, varying but slightly from a due east and west line. On Rolling prairie, the angling is more unfavorable.

An assessment is ordered upon the stock, notice of which will be found in our advertising columns.

It may be as well to add, as so much has been said upon the subject, that the cars will come through without stopping or disconnecting at the Michigan State line.—*South Bend Register.*

**Alabama.**

**Montgomery and West Point Railroad.**—The annual report of the directors of this company, submitted at a meeting of the stockholders held at Montgomery on the 14th, presents the following statement of the operations of the company for the year ending March 1st, 1851:—

Receipts from passengers.....	\$78,511 29
“ freight.....	47,880 89
“ U. S. mail.....	13,664 91
“ other sources.....	8,155 48
	\$148,212 57

Deduct expenses.....	\$67,148 73
Interest on loans.....	23,492 41—
	90,634 14

Showing a net income of.....\$57,571 43

Equal to 9½ per cent on the capital stock.

The road will be completed to West Point, and open for use on the 1st of May.

The company have expended in building the road, from Opelika to West Point, 22 miles, \$180,081 72.

The business of the road, for the past two years, shows a satisfactory increase in receipts, as the company only opened a part of their new road in November as far as Cusseta, and to Strahan's, within three miles of West Point, in February.

The receipts show as follows:—

	No. of Passengers.	Bales of Cotton.	Amount.
For year to—			
Mar. 1, 1851.....	30,032	25,989	\$140,057 09
Mar. 1, 1850.....	24,875	24,236	120,781 61
Increase....	5,157	1,753	\$19,275 48

We understand that the receipts for March, and up to the 20th of April, this year, shows a very heavy increase over last year—being this year 21,-

378, against 14,762 last year; increase, 6,616—nearly 50 per cent.

The following gentlemen were chosen directors for the current year:—

Charles T. Pollard, President.

**Directors.**

Thomas H. Cowles, of Alabama.

Abner McGehee, “

William Taylor, “

John P. King, of Georgia.

**Illinois.**

**Peoria and Oquawka Railroad.**—A meeting, to take into consideration the interests of the proposed road from Peoria to Oquawka was held at Knoxville on the 9th instant, at which the following resolutions were adopted:

Resolved, That while we regret the bad state of the roads has prevented very many of the friends of the Peoria and Oquawka railroad from attending this meeting, we have every confidence that the road will be built, and when built, will be of incalculable benefit to the whole region which it will affect.

Resolved, That we have entire confidence that the city of Peoria will follow the example set them by the citizens of Burlington, in voting a subscription to the stock of the road—that the action of these enterprising and growing cities will meet with a hearty response from town and county—and that when city, and town, and county shall unite in a “long pull, a strong pull, and a pull altogether,” then the construction of the road will be a fixed fact.

The people of Warren county have already voted in favor of the county taking \$50,000 stock in this road, the vote standing, so far as we have learned from our exchanges, 576 for to 113 against. The city of Peoria votes to-day (21st) upon a proposition for the city to subscribe \$75,000 to the same road.

**Railroad Progress in Georgia.**

The work for the junction of our railroads at Macon is going forward most satisfactorily. Timber is being fast got on the ground for the coffer dam of the viaduct over the Ocamulgee, and the lattice work is also being got out. The members of the next Legislature will pass over this new viaduct on a continuous track, and there is not the most remote doubt that the river will be crossed long before that time, for it will not be necessary to wait for the pier in the middle of the river, (should its construction be retarded) as the viaduct will be amply strong to be used temporarily without it.

The Macon and Western road have ordered their iron, surveyed the route, and made every other requisite arrangement to gain the level from the new depot on the Macon Common to a point at some distance from their depot. On this side of the river the grading, &c., for the connection, will be done in ample season. Mr. Reynolds is, at the same time, grading through the streets at Macon, and preparing the site of his new depot for the South Western road, at which the other tracks are to join.

The Milledgeville and Gordon, and Milledgeville and Eatonton roads, will be much better roads than was at first anticipated. In other words, they will have the thick flange rail from the Macon and Western road, instead of the old flat bar from the Central road, as first intended. The whole summed distance from Gordon to Eatonton is 37 miles. Of this distance, 34 miles will be laid down with the newest and best flange rail, now being removed from the Macon and Western. Hence these new roads will be quite equal to the original Macon and Western road. Already the cross ties are distributed along most of the distance from Milledgeville to Gordon. The whole distance is 17 miles. The members of the next Legislature will find at least 14 miles of that distance done. A heavy rock excavation, not far from the Oglethorpe University, may, and probably will, retard the construction of the remaining three miles.



All the contracts on the Milledgeville and Gordon road have been taken, except those for one or two bridges, and a new saw mill commenced working yesterday to cut out the stringers. Another new saw mill is being put up not far from Milledgeville, to cut out timber for the Eatonton road. The contracts for grading on this last road are all taken, and this part of the work will all be done by the first of January next.—*Savannah Republican*.

#### Steam Power of France.

There exists in France 5,607 manufactories of various denominations, in which steam machinery is employed. This machinery is worked by means of boilers, the number of which is 9,288, and of which 8,776 were made in French establishments. These boilers represent a force of 65,120 horse-power, calculating the horse power as 75 kilogrammes [180 lbs.] raised one metre [1 yard] per second. These boilers represent the force that would be produced by 195,361 draught horses and 1,367,530 laborers. The steam horse power is equal in effect to about four draft horses and 21 laborers. The number of boilers employed in the preceding year was only 4,033 establishments existed in which steam power was used. The length of railway now open for traffic is 2,171 kilometres [1,300 miles,] on which are employed 725 locomotives. The number of steam trading vessels is 279. Their tonnage amounts to 40,098 tons. They are propelled by 502 engines, constituting a total power of 22,893 horses. The merchandise transported by these vessels amounted to 730,948 tons.

#### New Jersey.

**Morris Canal and Banking Company.**—The annual report of the directors of this company for the past year states that the canal was opened for navigation from Newark to Easton early in April, and closed about the 10th of December; during which time the navigation was continuous, and almost wholly uninterrupted. Owing to some very heavy freshets, interrupting navigation on the Lehigh canal, business was almost suspended for nearly two months. It will be remembered that this company is dependent upon the Lehigh canal and Beaver Meadow railroad for almost its entire business in the transportation of coal. The total tonnage of the past year was 239,680 against 234,305 for the year 1849. Of the total amount, coal contributed 114,017 tons.

The amount of tonnage for 1845 was 58,259; for 1846, 109,505; 1847, 155,559; 1848, 204,682. The income of the company for the year ending December 31st, 1850, is stated at \$109,173 22. The expenses for the same period were \$63,239 21.—This leaves a net balance of \$45,934 01, which would have reached \$60,000 but for the two months interruption of business operations on the Schuylkill canal. As it is, the company were enabled to pay a dividend of ten per cent on preferred stock, besides the interest on bonded debt. Since the last annual report was made, the building of ten new inclined planes, on an improved plan, has been commenced, and the old ones repaired. The aqueduct over the Pompton river has been rebuilt; the banks of the canal raised in order to increase the depth of water, and the work of reconstructing the canal from Newark to Jersey City and repairing the pier at its termination vigorously prosecuted. The whole is expected to be finished by the first of May. An increase of business, consequent upon these improvements, is of course looked for; and will no doubt accrue to the company. The number of shares of preferred stock subscrib-

ed for and issued amounts to 5127 shares. The proceeds of nearly 2000 of this number were required to pay the floating debt and back interest. The remainder went to defray expenses just mentioned.

The following "general account" and statement of tolls received from 1845 to 1850, inclusive, will show the state and condition of the company and the increase of its revenue.

#### General Account of the Morris Canal and Banking Company, for 1850.

Cash, cash items, debts due the company, bills receivable, and suspense account at the closing of the books for 1849.....	\$3,639 55
Less debts due by the co..	2,312 54
Earnings in 1850.....	\$1,346 81
Sales of preferred stock...	109,173 22
	492,750 00
	\$533,270 03
Current charges for 1850.....	\$63,239 21
Floating debt and interest.....	102,125 10
Interest coupons on bonded debt.....	80,106 25
Dividends on preferred stock.....	8,033 89
New work, [improvement account]...	224,465 58
New boats.....	5,358 78
Steam tow boat.....	8,576 06
Land damages.....	3,902 92
Commissions.....	15,125 00
Salary of trustees of mortgage loan for 1848-9.....	1,200 00
Current charges for 1851.....	87 50
	\$22,080 42
	11,882 61
Suspense account.....	470 55
Cash on hand.....	8,482 58
	\$533,270 03

#### Champlain and St. Lawrence Railroad.

We have to announce to the citizens of Montreal that the President of the railroad above named, has closed for the purchase of the iron rails to complete the branch to Moffat's Island, to be shipped early this summer. There is now no doubt but that the undertaking will be perfected during the present season, and that the year 1851 will witness the connection of Montreal by rail with the cities of Boston and New York. Long have we desired to see this, and we rejoice at the prospect, ere many months, of being within a few hours' reach of those great emporiums of wealth and business. With a further extension of the lines from Rouse's Point to Plattsburg, (which will be commenced and carried on simultaneously with the works at this end,) and the ultimate connection with a road from Whitehall northward, on the west of Lake Champlain, we shall have all that can be desired in the way of communication with New York. The several railroad lines of New England, the far famed steam navigation of Lake Champlain, and the additional iron road through Plattsburgh and Rouse's Point, to within one mile of our wharves, will bring to our city business and business men, with their accompanying train of wealth and prosperity.

The extension from St. Johns to Rouse's Point will be finished in the end of June or the beginning of July next. The distance will be as follows when the road is completed:

	Miles.
From Montreal Wharf to Moffat's Island...	1 11
" Island to Junction beyond Laprairie...	9 43
" Junction to St. Johns.....	10 68
" St. Johns to Rouse's Point.....	22 08
Total length.....	43 20

## LOWMOOR

### U. S. BEST FINCH IRON.

**To Iron Merchants.**  
JOHN FINCH & SONS, Iron Merchants, Liverpool, now are, and for more than twenty years past have been, sole Agents for the LOWMOOR IRON COMPANY, for the United States and Canada, for the sale of their well known R. I. way Tire Bars, and Axles, Piston Rods, Boiler Plates, Angle, Rivet, and all other kinds of Lowmoor Iron; also, sole Agents for the sale of the superior St. Iordshire Iron stamped "FINCH CROWN" and "U. S. BEST FINCH;" and Merchants and Wholesale Dealers in all other kinds of British Iron.

We hereby inform our friends and the public that we have this day appointed Mr. WM. BAILEY LANG, of Boston, as our only representative to receive orders and to transact our general business in the United States.

For JOHN FINCH & SONS,  
JOHN FINCH Sen.

Boston, April 11, 1851.

LOWMOOR and other Bent, Welded and Blocked RAILWAY TIRES, ready for use, E. FINCH'S Patent Dovetailed and other kinds of WROUGHT IRON RAILWAY WHEELS, with, or without the finished Axles, for Locomotives and for Passenger and Merchandise Cars, also Wrought Iron Railway Chairs, Railway Spikes, etc.

To the Managers of Railways, Engineers and others: Gentlemen:—We, FINCH & WILLEY, Engineers, Liverpool, Manufacturers of the above articles, respectfully inform you that we have this day appointed Mr. WM. BAILEY LANG, of Boston, as our sole Agent for the sale of said articles, and the transaction of our business in the United States of America, and for whom we solicit your kind attention and patronage.

For FINCH & WILLEY,  
JOHN FINCH, Sen.

Boston, April 11, 1851.

Having accepted the above Agencies, I beg leave to solicit your orders, which shall at all times receive my prompt and careful attention. Please address all communications either to MESSRS. JOHN FINCH & SONS or MESSRS. FINCH & WILLEY, Liverpool; or to me, at my Steel Warehouse, No. 9 Liberty Square, Boston. Yours very respectfully,

WM. BAILEY LANG.

Boston, April 11, 1851.

The following are testimonials of the quality of FINCH & WILLEY'S WROUGHT IRON RAILWAY WHEELS from the Yorkshire and Lancashire Railway Co., one of the largest in Great Britain, and from the London and North Western Railway Co., the largest Railway Company in the world.

#### LONDON AND NORTH WESTERN RAILWAY, (Northern Division.)

WAGON DEPARTMENT, ORDSALL LANE, Manchester, January 4, 1851.

Gentlemen:—I have very great pleasure in bearing my testimony to the excellent quality of your Wrought Iron Railway Wheels.

This Company have many of them now in use on their lines, and during my experience, as their Superintendent, which is now upwards of 9 years standing, I have not known any of them to fail during that time.

I am, Gentlemen, yours, truly,  
OWEN OWENS.

MESSRS. FINCH & WILLEY,  
Windsor Foundry.

#### LANCASHIRE AND YORKSHIRE RAILWAY, Wagon Department, Jan. 3, 1851.

Messrs. Finch & Willey,  
Gentlemen: In reply to your request writing me to give my opinion of the 700 sets of Wrought Iron Wheels you furnished this company during the years 1847 and 1848, I have much pleasure in stating that we have not had a single instance of your Wheels failing in any respect, and I consider them equal if not superior to any Wheels we have on this line of railway. The Tires being LOWMOOR iron, 14 inch thick, I have no doubt they will run under ordinary goods' wagons 12 years without any repairs more than the tires turning up. I am Gentlemen,  
Yours, truly, WM. EMMETT.

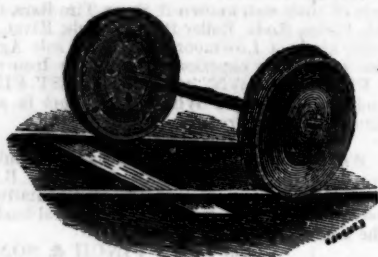
NOTE.—4 Wheels and 2 Axles are one set, consequently this order contained 2000 WHEELS and 1400 AXLES; value over \$100,000.

**Boston Locomotive Works,**

—Late Hinkley & Drury—  
No. 380 Harrison Avenue,  
BOSTON.

Locomotive and Stationary Steam Engines; Boilers; Iron, Brass, Copper and Composition Castings; Coppersmith's Work, and all kinds of Railroad Machinery furnished at short notice.

ALSO

**Van Kuran's Improved Railroad Wheel,**

Patented May 1, 1849. Manufactured under the personal superintendence of the Patentee, as above.

Orders for any quantity of wheels executed with dispatch, and wheels and axles fitted in the very best manner and at the lowest rates. Address  
DANIEL F. CHILD, Treasurer, Boston.

**Providence Tool Co.,**

MANUFACTURERS OF

Plane Irons, Tooth Irons, Soft Moulding and Rabbit Irons, Cornice Irons, Plow Bitts, and Planing Machine Knives:

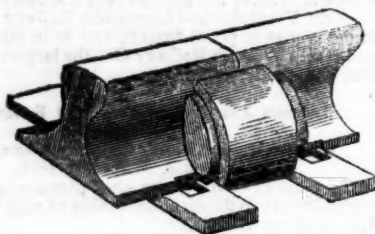
**NUTS, WASHERS AND BOLTS.**

—ALSO—

**PLATE HINGES AND PICK AXES.**

They are prepared to execute orders for all descriptions of Cold Punching and Job Work.

WM. FIELD, Agent. RUFUS WATERMAN, Treas.  
PROVIDENCE, R. I.

**Railroad Iron,  
SPIKES, AND  
WROUGHT IRON CHAIRS.**

THE Undersigned, Agent for Manufacturers, is authorized to contract for Welsh Railroad Iron of the best quality, and deliverable at any port on favorable terms, also Spikes and Wrought Iron Chairs, made from the best iron, and of any pattern and weight. The new Wrought Iron Chair, with the introduction of a "Key," as per the annexed plan, will be found a great improvement on the old pattern.



Boiler Plates of superior quality, perfect regularity in the squaring and thickness, and made with great care.

Samples can be seen at the office, No. 20 Beaver st.  
CHARLES ILLIUS.

**Railroad Iron.**

THE UNDERSIGNED, HAVING made arrangements abroad, are prepared to contract for the delivery of Foreign rails, of approved brands upon the most favorable terms.

They will also make contracts for American rails, made at their Trenton works, from Andover Iron, in whole or in part, as may be agreed upon.

They are prepared to furnish Telegraph, Spring and Market Wire; Braziers and Wire Rods; Rivets and Merchant Bars to order, all made exclusively from Andover Iron. The attention of parties who require iron of the very best quality for special purposes, is respectfully invited.

COOPER & HEWITT,  
17 Burling Slip, New York.

February 15, 1850.

**Railroad Lanterns.**

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,  
No. 24 Commercial St. Boston.

August, 16, 1849. 6m33

**To Contractors.***Covington and Lexington Railroad.*

SEALED PROPOSALS will be received at the Covington and Lexington Railroad Company, in this city, until the fifth day of May next, for Grading forty miles of the Covington and Lexington Railroad, commencing at the town of Falmouth, Pendleton Co., and extending up the valley of the South Licking river to the town of Cythiana, Harrison Co., thence to the town of Paris, Bourbon Co.

The proposals will include all the excavations, embankments and masonry for culverts; also, the masonry for bridges.

Plans and specifications of the work, to be seen at the office of the company at any time between the twenty-fifth of April next and the 5th of May.

SYLVESTER WELCH,  
Engineer Cov. and Lex. R.R.

Office of the Covington & Lexington Railroad, }  
Covington, Ky., April 1st, 1851.

**Railroad Iron.**

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.

THOMAS B. SANDS & CO.,  
73 New street,  
New York.

February 3, 1849.

**Glendon Refined Iron.**

Round Iron, Band Iron, Hoop Iron,  
Square " Flat " Scroll "

Axles, Locomotive Tyres,  
Manufactured at the Glendon Mills, East Boston, for sale by  
GEORGE GARDNER & CO.,  
5 Liberty Square, Boston, Mass.

Sept. 15, 1849. 3m37

**Stickney & Beatty,  
DEALERS IN IRON AND IRON  
MANUFACTURERS.**

AGENTS for the Baltimore City Rolling Mill, (Works of Messrs. Ellicott) also agents for the sale of the Laurel, Locust Grove and Gunpowder (Balt.) Forge Pig Irons; Hupp's Cold Blast Columbia Wheel Iron, Fort and anti-Eatam Pig Irons. Caledonia, Columbia and Capon Cold Blast Boiler Blooms, warranted; Wm. Jessop & Son's Steel; Old Colony and anti-Eatam Nails; Bar Iron, Boiler Plates, Hoop, Sheet, Oval, Half Oval, Horse Shoe and other Iron. Exchange Place, Baltimore.

**Lovegrove's Patent Cast Iron  
Water and Gas Pipes.**

THE Subscriber, the Inventor and Patentee of the Centrifugal mode of giving form to metallic substances while in a molten state, is preparing to make Cast Iron Water and Gas Pipes, of any dimensions, at prices much lower than they can be made in the old manner, and the pipes warranted to stand a pressure of three hundred pounds to the square inch, and to be soft enough to drill. Steam Engines and all kinds of machinery. Cast Iron Doors and Frames, and Mill Castings of every description, made to order.

THOMAS J. LOVEGROVE,  
Machinist and Founder,  
West Falls Avenue, below Pratt st., Baltimore.

**To Contractors.**

ENGINEER'S OFFICE CENTRAL OHIO R. R., }  
Zanesville, March 20, 1851. }

SEALED PROPOSALS for the Masonry of a Railroad Bridge across the Muskingum River at Zanesville, will be received at this office until the 15th of May next.

Also for the Iron or Wooden Superstructure of said Bridge, and for draw bridge across the Canal.

Plans and specifications furnished on the 1st of May next. Bidders may furnish their own plans and specifications, if filed at this office prior to that day.

By order of the Board.

ROBERT MAC LEOD,  
Chief Engineer.

**Notice to Contractors.***Virginia Central Railroad.*

SEALED PROPOSALS will be received at the Engineer's Office of the Virginia Central Railroad, Charlottesville, on the 7th of May, 1851, for the Grading, Masonry and Brickwork of that portion of the line extending from Woodville to Blair Park, a distance of nine miles. Drawings and Specifications of the work may be seen from the 5th to the 7th of May inclusive. The best of references and an energetic prosecution of the work will be required.

Contractors are requested to state what work they are engaged on and when it will be completed. The directors reserve the right to accept or reject proposals, as they consider the interests of the company require. The names in full of all the parties must be given in the proposal.

By order of the President and Directors.

T. COLDEN RUGGLES,  
Chief Engineer.

Charlottesville, April 8th, 1851.

**ENGINEERS.****Atkinson, T. C.,**

Mining and Civil Engineer,  
Orange and Alexandria Railroad, Alexandria, Va.

**Clement, Wm. H.,**

Little Miami Railroad, Cincinnati, Ohio.

**Cozzens, W. H.,**

Engineer and Surveyor, St. Louis, Mo.

**Alfred W. Craven,**

Chief Engineer Croton Aqueduct, New York.

**Floyd-Jones, Charles,**

Alton and Sangamon Railroad, Alton, Illinois.

**Gay, Edward F.,**

Columbia and Philadelphia Railroad, Philadelphia Pa.

**Gilbert, Wm. B.,**

Rutland and Burlington Railroad, Rutland, Vt.

**Gzowski, Mr.,**

St. Lawrence & Atlantic Railroad, Montreal, Canada.

**Grant, James H.,**

Nashville and Chattanooga R. R., Nashville, Tenn.

**S. W. Hill,**

Mining Engineer and Surveyor, Eagle River,  
Lake Superior.

**Holcomb, F. P.**

Southwestern Railroad, Macon, Ga.

**Latrobe, B. H.,**

Baltimore and Ohio Railroad, Baltimore, Md.

**Miller, J. F.,**

Buffalo and Conhocton Valley Railroad, Bath, N. Y.

**Morris, Elwood,**

Schuylkill Navigation, Schuylkill Haven, Pa.

**Nott, Samuel,**

Lawrence and Manchester Railroad, Boston,

**Osborne, Richard B.,**

Civil Engineer, Philadelphia.



**Prichard, M. B.,**  
East Tennessee and Georgia R. R., Cleveland, Tenn.

**W. Milnor Roberts,**  
Bellevue and Indiana Railroad, Marion, Ohio.

**Roberts, Solomon W.,**  
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

**Sanford, C. O.,**  
South Side Railroad, Virginia.

**Schlatter, Charles L.,**  
Northern Railroad (Ogdensburg), Malone, N. Y.

**Steele, J. Dutton,**  
Pottstown, Pa.

**Trautwine, John C.,**  
Civil Engineer and Architect, Philadelphia.

**Tinkham, A. W.,**  
United States Fort, Bucksport, Me.

**Troost, Lewis,**  
Alabama and Tennessee Railroad, Selma, Ala.

**Whipple, S.,**  
Civil Engineer and Bridge Builder, Utica, N. Y.

## HOTELS.

**DAVIS'S**  
**ALHAMBRA HALL,**  
No. 136 Pratt street,  
BALTIMORE.

**Exchange Hotel,**  
Adjoining Eastern Railroad Depot,  
BUFFALO, N. Y.  
BY.....**FISK & SPERRY,**  
Late of Delevan House, Albany.

**MANSION,**  
Corner of Maine and Exchange Streets,  
**P. DORSHIMER.** BUFFALO.

**Barnum's City Hotel,**  
MONUMENT SQUARE, BALTIMORE.  
This Extensive Establishment, erected expressly  
for a Hotel, with every regard to comfort and conven-  
ience, is situated in the centre and most fashionable  
part of the city, and but a few minutes' walk from the  
Railroad Depots and Steamboat Landings.  
The House has lately undergone a thorough repair,  
embracing many valuable improvements, and will ac-  
commodate 250 Guests. **BARNUM & CO.**

**American Hotel,**  
Pratt street, opposite the Railroad Depot,  
BALTIMORE.  
**HENRY M. SMITH.....Proprietor.**  
Late of the Exchange & St. Charles Hotels, Pittsburgh

**Washington Hotel,**  
BY **JOHN GILMAN,**  
\$1 Per Day.  
No. 206 Pratt street, (near the Depot,)  
BALTIMORE.

**GUY'S**  
**United States Hotel,**  
(Opposite Pratt street Railroad Depot,)  
BALTIMORE.  
**JOHN GUY.** **WILLIAM GUY.**

**DUNLAP'S HOTEL,**  
On the European Plan,  
NO. 135 FULTON STREET,  
Between Broadway and Nassau St.,  
NEW YORK.

**JONES' HOTEL,**  
NO. 152 CHESTNUT STREET,  
PHILADELPHIA.  
**BIRDSON & WATSON.....Proprietors.**

**Fountain Hotel,**  
LIGHT STREET, BALTIMORE,  
**P. THURSTON.....Proprietor.**

## BUSINESS CARDS.

**Walter R. Johnson,**  
CIVIL AND MINING ENGINEER AND AT-  
torney for Patents. Office and Laboratory, F St.,  
opposite the Patent office, Washington, D. C.

**Lithography.**  
**JOHN P. HALL & CO.,**  
161 Main st., Buffalo, (Commercial Advertiser Build.)  
Are prepared to execute all kinds of Lithography  
in good style and at reasonable rates. Particular at-  
tention will be paid to Engraving Railroad Maps, En-  
gineer's Plans and drafts, etc., and orders in this line  
are respectfully solicited.

**Cumberland, (Md.) Coals for**  
**Steaming, etc.**  
ORDERS RECEIVED FOR AND FILLED  
by **J. COWLES, 27 Wall St., N. Y.**

**J. & L. Tuckerman,**  
IRON COMMISSION MERCHANTS,  
AND MANUFACTURERS OF  
ULSTER BAR & POUGHKEEPSIE PIG IRON,  
69 WEST STREET,  
NEW YORK

**Henry I. Ibbotson,**  
IMPORTER of Sheffield and Birmingham Goods.  
Also, Agent for the Manufacture of Telegraph  
Wire. 218 PEARL ST., NEW YORK.

**Charles T. Jackson, M. D.,**  
STATE ASSAYER, late Geologist to Maine, Rhode  
Island, New Hampshire, and the United States,  
offers his services to his friends and the public in mak-  
ing any Chemical, Mineralogical or Geological re-  
searches that may be required for the improvement of  
Agriculture and the Manufacturing Arts. Particular  
attention will be paid to the exploration of mines and  
to assaying of ores of the metals.  
State Assayer's office, 31 Somerset st.  
Boston Sept. 3, 1850.

**STEEL AND FILES.**  
**R. S. Stenton,**  
20 CLIFF STREET, NEW YORK,  
AGENT FOR  
**J. & RILEY CARR,**  
BAILEY-LANE WORKS, SHEFFIELD,  
Manufacturers of Cast, Shear, German, Blister, and  
**Spring Steel,**  
Of all descriptions, Warranted Good.

**FILES.**  
Manufacturers of Machinists' Warranted Best Cast  
Steel Files, expressly for working upon Iron and Steel,  
made very heavy for recutting.  
A full Stock of Steel and Files at all times on  
hand. 6m4

**Dudley B. Fuller & Co.,**  
IRON COMMISSION MERCHANTS,  
No. 139 GREENWICH STREET,  
NEW YORK.

**Manning & Lee,**  
GENERAL COMMISSION MERCHANTS,  
NO. 51 EXCHANGE PLACE,  
BALTIMORE.  
Agents for Avalon Railroad Iron and Nail Works.  
Maryland Mining Company's Cumberland Coal 'CED'  
-Potomac' and other good brands of Pig Iron.

**Samuel Kimber & Co.,**  
COMMISSION MERCHANTS  
WILLOW ST. WHARVES, PHILADELPHIA.  
AGENTS for the sale of Charcoal and Anthracite  
Pig Iron, Hammered Railroad Car and Locomo-  
tive Axles, Force Pumps of the most approved con-  
struction for Railroad Water Stations and Hydraulic  
Rams, etc., etc.  
July, 27, 1849.

**James Herron, Civil Engineer,**  
OF THE UNITED STATES NAVY YARD,  
PENSACOLA, FLORIDA.,  
PATENTEE OF THE  
**HERRON RAILWAY TRACK.**  
Models of this Track, on the most improved plan,  
may be seen at the Engineer's office of the New York  
and Erie Railroad.

## PLUSHES

FOR  
**Railway Cars & Omnibuses.**  
**F. S. & S. A. MARTINE,**  
112 WILLIAM ST., NEAR JOHN.

ARE now receiving a large and complete assort-  
ment of Plain and Figured PLUSHES, of their  
own importation, which will be sold at the lowest  
market price, viz: Crimson, Maroon, Scarlet, Green,  
Blue, Purple, etc.  
ALSO—CURLED HAIR, the best manufactured  
in market.

**To Railroad Companies,**  
**Machinists, Car Man-**  
**ufacturers, etc., etc.**

**CHARLES T. GILBERT,**  
NO. 80 BROAD ST., NEW YORK,

IS prepared to contract for furnishing at manufac-  
turer's prices—  
Railroad Iron,  
Locomotive Engines,  
Passenger and Freight Cars,  
Car Wheels and Axles,  
Chairs and Spikes.  
Orders are invited; and all inquiries in relation to  
any of the above articles will receive immediate atten-  
tion

**Manufacture of Patent Wire**  
**ROPE AND CABLES,**  
For Inclined Planes, Suspension Bridges, Standing  
Rigging, Mines, Cranes, Derrick, Tilters, &c., by  
**JOHN A. ROEBLING, Civil Engineer,**  
TRENTON, N. J.

## FORGING.

**Ranstead, Dearborn & Co.,**  
MANUFACTURERS OF  
LOCOMOTIVE CRANKS AND CAR AXLES,  
ALSO  
WROUGHT IRON SHAFTING,  
And All Kinds of Hammered Shapes.  
Office 25 Foster's Wharf, Boston.

**Samuel D. Willmott,**  
MERCHANT, AND MANUFACTURER OF  
CAST STEEL WARRANTED SAWS,  
—AND FILES—  
IMPORTER OF THE  
GENUINE WICKESRLY GRINDSTONES  
NO. 8 LIBERTY STREET,  
NEW YORK.

## Railroad Instruments.

**THEODOLITES, TRANSIT COMPASSES,**  
and Levels, with Fraunhoffer's Munich Glasses,  
Surveyor's Compasses, Chains, Drawing Instru-  
ments, Barometers, etc., all of the best quality and  
workmanship, for sale at unusually low prices, by  
**E. & G. W. BLUNT,**  
No. 179 Water St., cor. Burling Slip.  
New York, May 19, 1849.

## IRON.

### Iron.

Pig Iron, Anthracite and Charcoal; Boiler and Flue  
Iron, Spring and Blistered Steel, Nail Rods, Best Re-  
fined Bar Iron, Railroad Iron, Car Axles, Nails, Stove  
Castings, Cast Iron Pipes of all sizes, Railway Chairs  
of approved patterns' for sale by  
**COLEMAN, KELTON & CAMPBELL,**  
109 N. Water St., Philadelphia.

### Iron Store.

THE Subscribers, having the selling agency of the  
following named Rolling Mills, viz: Norristown,  
Rough and Ready, Kensington, Triadelphia, Potts-  
grove and Thorndale, can supply Railroad Companies,  
Merchants and others, at the wholesale mill prices for  
bars of all sizes, sheets cut to order as large as 58 in.  
diameter; Railroad Iron, domestic and foreign; Locomo-  
tive tire welded to given size; Chairs and Spikes;  
Iron for shafting, locomotive and general machinery  
purposes; Cast, Shear, Blister and Spring Steel; Boil-  
er rivets; Copper; Pig Iron, etc., etc.  
**MORRIS, JONES & CO.,**  
Iron Merchants,  
Schuylkill 7th and Market Sts., Philadelphia.  
August 16, 1849. 1733

**Bowling Iron. Stamped B.O.**

Railway Tire Bars  
Locomotive and other Axles  
Boiler Plates  
Rivet Iron  
Locomotive Frame do  
Bars,  
and every other description of this superior Iron.

The subscribers, agents for the sale of Bowling Iron, are prepared to execute orders for importation, especially for railway and machinery uses, with despatch from the manufacturers.

RAYMOND & FULLERTON, 45 Cliff st.

**Ibbotson, Brothers & Co's  
CELEBRATED CAST STEEL**

Best Cast Steel Royal Improved Files, well known as better adapted for Engineers' and Machinists' purposes than any now in use in the United States.

Every description of Square, Octagon, Flat and Round Cast Steel, Sheet, Shovel and Railway Spring Steel, etc., and Steel to order for any purposes—manufactured at their works in Sheffield—and universally known by the old stamp "Globe."

HENRY I. IBBOTSON, Agent,  
218 Pearl st., New York.

**Smith & Tyson,,  
IRON COMMISSION MERCHANTS,  
BALTIMORE.**

**REFINED** Juniata Charcoal Billet Iron for Wire.

Do. for Bridging, of great strength.  
Flat Rock, Boiler and Flue Iron, rolled to pattern.  
Elba, Wheel Iron of great strength and superior chilling properties. Elba Forge Iron, American Shot Iron, Cut Nails, Spikes and Brads, Nail and Spike rods, Railroad Spikes of superior quality, Wrought Chair plates of any pattern, punched or plain.

**WILLIAM JESSOP & SONS',  
CELEBRATED CAST-STEEL.**

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon.  
Best warranted Cast Steel—square, flat and octagon.  
Best double and single Shear Steel—warranted.  
Machinery Steel—round.  
Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.  
Genuine "Sykes," L. Blister Steel.  
Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by

WM. JESSOP & SONS,  
91 John street, New York.  
Also by their Agents—  
Curtis & Hand, 47 Commerce street, Philadelphia.  
Alex'r Fullerton & Co., 119 Milk street, Boston.  
Stickney & Beatty, South Charles street, Baltimore.  
May 6, 1848.

**Railroad Iron.**

B. O. Railway Tires, Railway Wheels,  
Scotch Pig Iron, Tin Plates and Banca Tin,  
Muntz's Patent Metal Sheathing,  
Baltimore Copper.

Contracts for Rails made on behalf of the manufacturers, for delivery at any ports in the United States, at fixed prices.

Bowling Tires and Tire Bars and Scotch Pigs imported to order.

Muntz's Ship-sheathing, and a general stock of Tin Plates and Banca Tin in store, and for sale by

RAYMOND & FULLERTON, 45 Cliff st.

**IRONDALE PIG METAL, MANUFACTURED**

and for sale by the Bloomsburg Railroad Iron Co.  
LINDLEY FISHER, Treasurer.  
75 N. Water St., Philadelphia.

**Car Wheel Iron.**

THE celebrated cold blast "Conowingo" Pig Iron, for Railroad Wheels, Chilled Rolls, etc., for sale by

E. PRATT & BROTHER,  
Baltimore, Md.

**Railroad Iron.**

3,000 TONS C. L. MAKE 63½ lbs. per yard, now landing and to arrive.  
Also contracts made for future delivery of above superior make English Iron.

300 Tons Banks Best Iron, Round, Square and Flat.  
200 " English Bar " " "  
10 " 9-16 Square Iron for Railroad Spikes.

For sale in lots to suit purchasers by  
DAVID W. WETMORE.  
New York, March 25, 1850.

**Railroad Iron.**

CONTRACTS made by the subscribers, agents for the manufacturers, for the delivery of Railway Iron, at any port in the United States, at fixed prices, and of quality tried and approved for many years, on the oldest railways in this country.

RAYMOND & FULLERTON, 45 Cliff st.

**JOHNSON, CAMMELL & Co's  
Celebrated Cast Steel,**

AND  
ENGINEERING AND MACHINE FILES,  
which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.

JOHNSON, CAMMELL & CO.,  
100 William St., New York.

November 23 1849.

**Bowling Tire Bars.**

40 Best Flange Bars 5½x2 inches, 11 feet long.  
40 " " 5½x2 " 7 feet 8 in. long.  
40 " Flat " 6x2 " 11 feet long.  
40 " " 6x2 " 7 feet 8 in. long.

Now in store and for sale by

RAYMOND & FULLERTON,  
45 Cliff street.

**Wheel, Forge and Foundry  
Iron.**

LOCUST GROVE Wheel Iron of great strength and superior chilling property.

Balt. Charcoal Forge Iron, from Patuxent, Curtis Creek and Gunpowder furnaces.

Elkridge Foundry Iron, of superior strength and softness. Anthracite and Charcoal Iron from Pennsylvania and Virginia. Gas and Water Pipes, Lamp Posts from Elkridge furnace.

LEMMON & GLENN,  
62 Buchanan's Wharf, Baltimore.

**Railroad Iron.**

1650 Tons, weighing about 61 lbs. per yard, 40 tons, weighing about 52 lbs. per yard, and 825 tons, weighing about 53½ lbs. per yard, of the latest and most approved patterns of T rail, for sale by

BOORMAN, JOHNSTON & CO.,  
119 Greenwich street.

New York, Aug. 26, 1850.

N.B.—B. J. & Co also are prepared to take contracts for English rails, delivered in any of the Atlantic ports of the United States.

**Railroad Iron.**

THE Undersigned, Agents for Manufacturers, are prepared to contract to deliver Rails of superior quality, and of any size or pattern, to any ports of discharge in the United States.

COLLINS, VOSE & CO.  
74 South St.

New York, June 1, 1850.

**Tredegar Iron Works.**

ROLLING MILL FOUNDRY AND MACHINE SHOPS. The undersigned continues to manufacture at his Works in this city (from best charcoal metal) Bar Iron of every description, embracing Rounds and Squares, from ½ to 5 inches diameter. Flats, from ½ to 7 inches, all thicknesses.

Bands and Scrolls, all sizes. Boiler plate and Plough Iron. Railroad and Locomotive Axles and Tires. Locomotive Frames, Spikes and Plates. Hoops, Ovals, Half Ovals, Half Rounds, Angle, T, L, and indeed every description of Iron usually manufactured, all of which he warrants to be equal to any made in this country. He also manufactures at his Foundry and Machine Shops all descriptions of Railroad Work, say, Locomotives, Railroad Wheels and Axles complete and ready for the road, Railroad Chairs, etc. Also, Marine and Stationary Engines all sizes, Sugar mills and Engines, Horse mills, and every kind of Machinery usually required for the operations of the country. He has paid particular attention to getting up machinery, etc., for Gold Mine operations, and those in want of such work might find it to their advantage to give him a call.

J. R. ANDERSON.  
Richmond, Va., Sept. 10, 1850.

CUT NAILS OF BEST QUALITY, BAR IRON (including Flat Rails) manufactured and for sale by  
FISHER, MORGAN & CO.,  
75 N. Water St., Philadelphia.

**Car Wheel Iron.**

100 Tons "Columbia" No. 2 Cold Blast Charcoal Iron.

300 Tons "Salsbury" No. 1, do. do.

For sale by CHARLES T. GILBERT,  
No. 80 Broad st.

New York, Sept. 21, 1850.

**Railroad Spikes.**

THE subscribers are prepared to make and execute contracts for Railroad Spikes of a superior quality, manufactured by the New Jersey Iron Company, at Boonton.

DUDLEY B. FULLER & CO.  
139 Greenwich st. corner of Cedar.

**S. S. Keyser & Co.,  
IRON WAREHOUSE,**

Corner of South and Pratt Streets,  
BALTIMORE, MD.

Selling Agents for the Rough and Ready Bar Iron and Elk Boiler and Flue Iron Rolling Mills, Sarah and Taylor Furnaces, and Wrightsville Hollow Ware Foundry, and Dealers in Bar and Sheet Iron, and Cast, Sheer, German, Blister, Spring and Electroplated Steel, etc., etc.

**Railroad Spikes, Boiler Rivets, etc.**

THE Subscribers, Agents for the sale of James S. Spencer's, Jr., Railroad and Boat Spikes, Boiler Rivets, and Wrought Iron Chairs for Railroads, made at his Works near this city, will execute all orders with promptness, despatch, and of the best quality.

ALSO IMPORTERS of English refined and Merchant bar Iron; Extra refined Car and Locomotive Axles (from 3½ to 6½ inches in diameter); B. O. Locomotive Tire (welded by Baldwin). Also, supply Boiler and Flue Iron cut to pattern or otherwise—Spring, Shear, and Cast Steel, etc., etc., etc.

T. & E. GEORGE.

Philadelphia, November 14, 1850.

**Railroad Iron.**

THE Undersigned, Agents for Manufacturers, are prepared to contract for the delivery of English, Welsh and Scotch Rails, of any pattern and weight, also for every description of English, Welsh, Scotch, and Swedish Iron, Railway Chairs and Spikes, Rivets, Bolts, Nuts, Washers, Chain Cables, Anchors, Tin Plates, German Spelter, Iron Castings, and every description of Machinery.

WILLIAM BIRD & CO.,  
Iron and Tin Plate Merchants,  
44 Wall st., New York.

And at 5 Martin's Lane, City, London,  
and 140 Buchanan st. Glasgow.

July 27th, 1850.

**Railroad Spikes, Wrought  
Chairs and Fastenings.**

THE subscribers continue to manufacture, with increased facilities, Hook and Flat Head Railroad Spikes and Chairs. The points being FINISHED BY HAND, have a long taper, and sharp point, and are much superior to those made entirely by machinery.

We are also prepared to furnish Wrought Chairs, Clamps and Fastenings of every description, either punched or plain. The best quality of refined iron is used in the above articles, and our prices will be made as favorable as any in the country.

The patent Clinch Spike will be found an improvement to secure the rail at the joints.

They drive in the manner shown and are not liable to work loose.

All communications, addressed to the undersigned, will meet with prompt attention.

SMITH & TYSON,  
No. 25 South Charles st., Baltimore Md.

**Railroad Iron.**

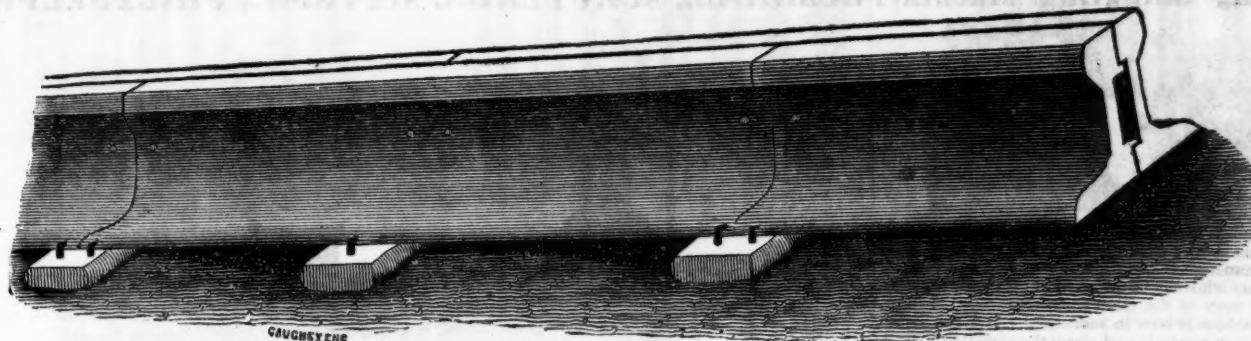
THE "Montour Iron Company" is prepared to execute orders for Rails of the usual patterns and weights, and of any required length not exceeding 30 feet per rail. Apply at the office of the Company, No. 73 South 4th st., Philadelphia,

Or to the Agents,  
CHOUTEAU, MERLE & SANFORD,  
No. 51 New st., New York.  
September, 1850.





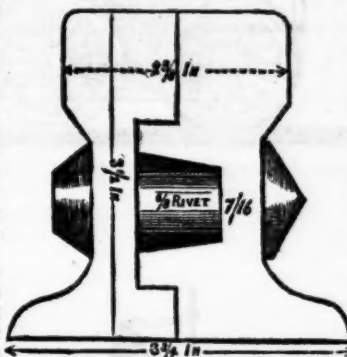
## PATENT COMPOUND RAIL.



THE UNDERSIGNED NOW OFFER TO THE Railroad Public a new Compound Railroad Bar, which possesses, as they believe, a decided superiority over every kind now in use. The Cuts annexed will give a good idea of the form of the Rail, and the mode of combination.

This Rail has now been in use on the New York and Erie and the Utica and Schenectady Railroads for nearly two years, and has proved itself to be a *durable* and *continuous* rail, realizing the advantages of a theoretically perfect rail, over the one in common use. We invite the attention of Railroad Companies to a careful examination of the merits of the form now offered.

The advantages of this Rail are: first, it effects a saving of from 25 to 50 per cent. in the wear and tear of the machinery; secondly, it saves to a vastly greater extent in the repairs of track; thirdly, it secures a much higher rate of speed with the same power; and what is of still



greater importance, it offers complete protection against most of the accidents to which companies are liable. For these reasons, it is believed to be not only the best, but the cheapest rail that can be used. In enumerating its advantages, the proprietors only repeat the statements of competent persons, who have had the best opportunities of judging of its merits.

This improved Rail is now being manufactured at the Works of the Mount Savage Iron Co. in Maryland. Any communications or enquiries addressed to either of the undersigned will receive prompt attention.

J. F. WINSLOW, President,  
Troy, N. Y.  
ERASTUS CORNING, Albany.  
WARREN DELANO, Jr., N. Y.  
JOHN M. FORBES, Boston.  
ENOCH PRATT, Baltimore.

April 8, 1851.

### Faggotted Car and Engine Axles

**FORGED** by RANSTEAD, DEARBORN & Co., Boston, Mass. These Axles enjoy the highest reputation for excellence, and are all warranted.

TO RAILROAD COMPANIES, CAR MANUFACTURERS, etc.

THE Undersigned hereby gives public notice, that the Commissioner of Patents, pursuant to his decision in relation thereto, on the 8th day of October, 1850, issued to him a Patent for the sole right to manufacture, and exclusive use of the INDIA RUBBER CAR SPRING, on account of priority of invention of said Spring.

New York, Oct. 23, 1850.

### Iron Trade of Pennsylvania.

DOCUMENTS and Statistics relating to the Manufacture of Iron in the State of Pennsylvania—giving a history of the manufacture from its commencement to this date, illustrated by diagrams. Also tables giving the address and capacity of every establishment in the State. Prepared by direction of the late convention of the trade held in Philadelphia. For sale by

LINDSAY & BLACKISTON, Philadelphia.  
FIELDING LUCUS, Jr., Baltimore.  
HENRY G. NICHOLS, 79 Water st., N. Y.

It will be sent by mail to any order enclosing the money, and post paid.

### Ulster Iron.

THE ULSTER IRON WORKS, Saugerties, N. Y., continue in full operation. Orders for round, square, flat, band, hoop and scroll iron, will be received and promptly executed by

J. & L. TUCKERMAN,  
69 West St., New York.

### Railway Iron.

THE Subscribers will contract to deliver, in the course of the ensuing Spring and Summer, the best English Rails, made by a particular specification, and of any pattern required.

DAVIS, BROOKS & CO.,  
68 Broad st.

On hand for sale, English rails of 58 lbs. to the yard, made by particular specifications.

January 10, 1851. 2m

### Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention.

J. F. WINSLOW, President,  
Troy, N. Y.  
ERASTUS CORNING, Albany  
WARREN DELANO, Jr., N. Y.  
JOHN M. FORBES, Boston.  
ENOCH PRATT, Baltimore, Md

November 6, 1848.

### Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.  
45 North Water St. Philadelphia.

March 15, 1849.

### LAP—WELDED WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,  
FROM ONE AND A QUARTER TO SEVEN  
INCHES IN DIAMETER.

THE ONLY Tubes of the same quality and manufacture as those so extensively used in England Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER & SON, Patentees,  
28 Platt street, New York.

### AMERICAN PIG IRON.

"POUGHKEEPSIE" brand, Dutchess Co., N. Y.  
"GLENDALE" brand, Lehigh county, Pa.  
Orders for the above two well known brands will be received, and promptly executed, by

J. & L. TUCKERMAN,  
69 West St., New York.

### Spikes, Spikes, Spikes.

ANY person wishing a simple and effective Spiking Machine, or a number of them, may be supplied by addressing J. W. FLACK, Troy, N. Y. or, MOORE HARDAWAY, Richmond, Va. March 6, 1850.

### Railroad Iron.

2000 Tons, weighing 58 pounds per lineal yard, of the most approved pattern of T rails, in store and to arrive, for sale by

COLLINS, VOSE & CO.,  
74 South St.

New York, June 1, 1850.

### American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N. J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

**PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.**—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y.  
The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Meritt & Co., New York; E. Pratt & Brother, Baltimore, Md.

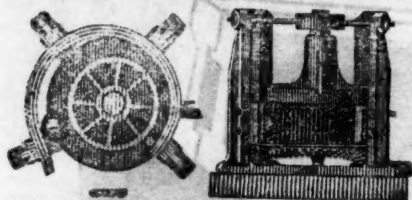
### American Railroad Iron.

1000 Tons, weighing 50 lbs. per yard, manufactured by Reeves, Abbott & Co., at the Safe Harbor Iron Works, and now lying in yard at Brooklyn, for sale by

CHOUTEAU, MERLE & SANFORD,  
No. 51 New street.

## MACHINERY.

## Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bore roll sounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

## Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,  
Troy Iron and Nail Factory, Troy, N. Y.

**CHILLED RAILROAD WHEELS.**—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,  
Willow St., below 13th,  
Philadelphia, Pa.

## Brown's Old Established SCALE WARE HOUSE,

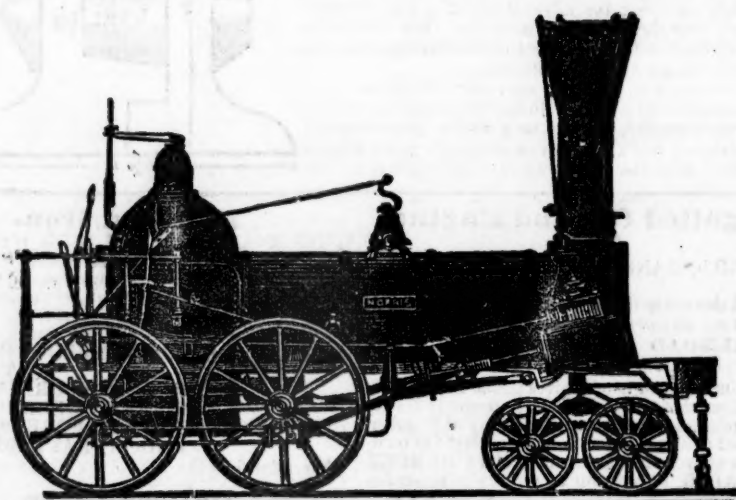
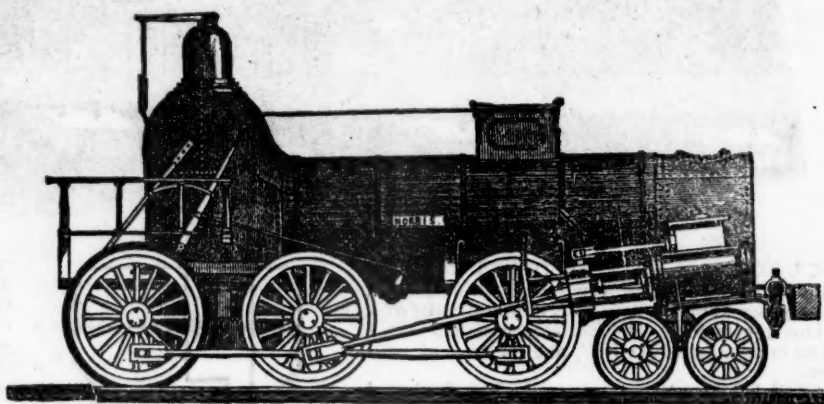
NO. 234 WATER ST., NEW YORK.

THE Subscriber, Practical Manufacturer of Scales of every description, respectfully asks the attention of Railroad Companies to his Improved Wrought Iron Railroad Track and Depot Scales which for strength, durability, accuracy, convenience in weighing, and beauty of workmanship, are not surpassed by any others in this country.

He is aware that this is rather a bold assertion for him to make, yet he can say with confidence that they have but to be tried to give them precedence over all others.

J. L. BROWN.

Bank Scales made to order, and all Scales of his make Warranted in every particular.  
References given if required

NORRIS' LOCOMOTIVE WORKS.  
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

## PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent,  
Troy Iron and Nail Factory, Troy, N. Y.

## Etna Safety Fuse.

THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,

Manufacturers,  
No. 85 Liberty St.  
NEW YORK.

And in the principal cities and towns in the U. States. The Premium of the AMERICAN INSTITUTE was awarded to the Etna Safety Fuse at the late Fair held in this city.  
November 3, 1848.

## UNION WORKS,

North street, opposite the Railroad Depot,  
BALTIMORE.

## Poole &amp; Hunt,

Manufacturers of Steam Engines and Mill Gearing, Machinists' Tools, and all kinds of heavy and light Machinery.

Also put up Arrangements of Wrought Iron Pipes for heating buildings and conveying steam or water.

Castings of every kind furnished at short notice.

Every exertion will be made to insure the satisfaction of customers.

## Patent Machine Picket Fence

SIX DIFFERENT STYLES of this fence are now made by patent machinery; and is by far the most economical fence for Railroads, Farms, Yards, etc., ever yet offered to the public, costing only from 4 to 30 cents per foot, according to pattern; and is so put up as to be shipped at a trifling expense. Full particulars will be furnished, by addressing the subscriber, to whom all orders should be sent.

N. STRATTON, Troy, N. Y.